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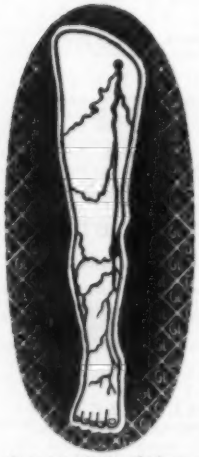

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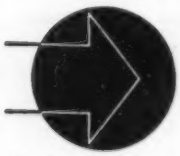

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In all illnesses the provision of the patient's energy requirements must take due note of the disturbed state of the digestive function. Easy digestibility is therefore a fundamental consideration. In pyrexial conditions an ample intake of fluid as a deterrent of systemic dehydration is equally important; hence, the recommendation of a liquid diet. It is claimed that LUCOZADE Tonic-Food Beverage adequately conforms to the above essential criteria and constitutes an ideal supplement to an invalid's diet.
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Wherever morphine is indicated

DILAUDID

TRADE MARK **BRAND**

dihydromorphinone

"Dilaudid" possesses all the therapeutic properties of morphine, but excels that drug in various respects:

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and the Newly-born Infant

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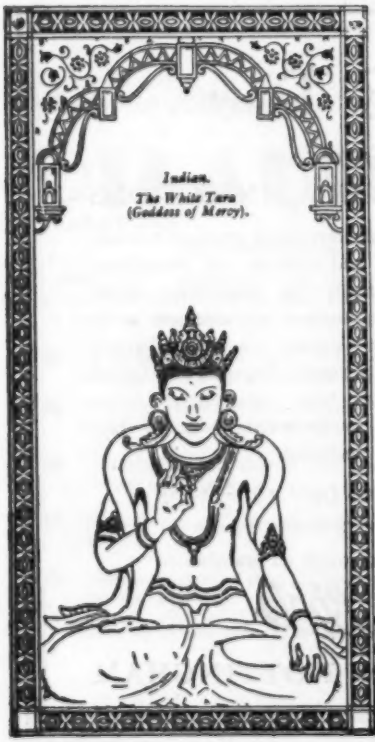

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SODIUM BICARBONATE, bismuth salts and other time-honoured antacids having each proved to possess individual disadvantages, an agent such as "Alocol" which combines the best therapeutic features of these with intrinsic merits of its own, must be of interest to the physician.

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ALLERGIC DISORDERS

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ADRENUTOL

THE value of adrenaline and chlorbutol in the treatment of asthma and the allergic disturbances was recently reported upon by Bernstien—*Brit. Med. J.* **2**, 274—and the solution recommended is now available under the name ADRENUTOL

ADRENUTOL is issued as follows :

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Formula "B" containing 1 mg. Adrenaline per c.c.

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Boxes of 6 x 1 c.c. Ampoules	- 3/3	- 3/- per box.
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A TRUE CHOLAGOGUE

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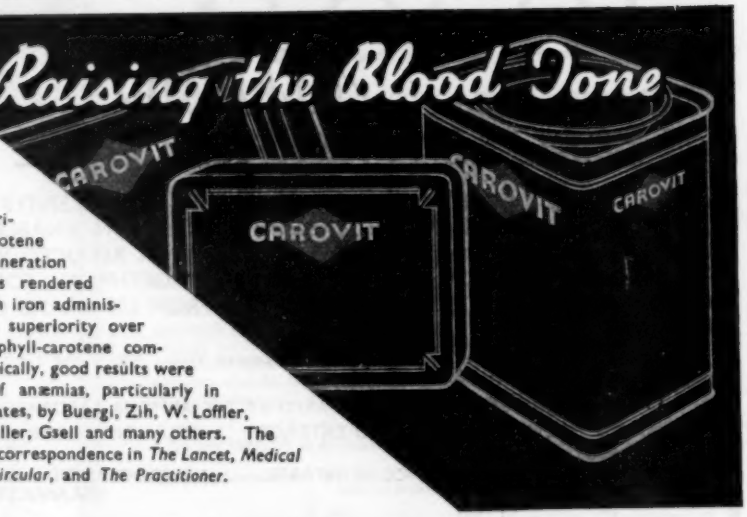
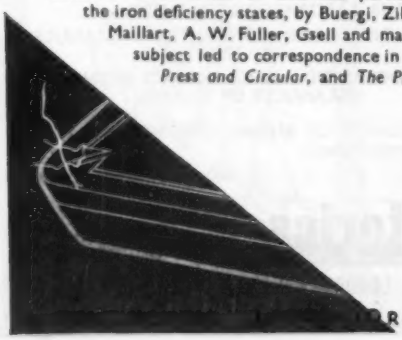
Carovit has a definite action in anæmias demonstrated by experimental and clinical work (Buergi and co-workers). Experimentally the chlorophyll-carotene combination stimulates regeneration of erythrocytes in animals rendered anæmic. Comparison with iron administration showed Buergi its superiority over iron (although the chlorophyll-carotene combination is iron-free). Clinically, good results were obtained in all forms of anæmias, particularly in the iron deficiency states, by Buergi, Zih, W. Loffler, Maillart, A. W. Fuller, Gsell and many others. The subject led to correspondence in *The Lancet*, *Medical Press and Circular*, and *The Practitioner*.





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Everything possible is being done, however, to maintain a full supply of Marmite for therapeutic purposes to hospitals and welfare centres, and we trust that such institutions will co-operate with us by not ordering more than they need for their immediate use.

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416

Each adult dose (two teaspoonfuls) contains in acid state :
Sodium Glycerophosphate... 2 grs.
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Strychnine Glycerophosphate $\frac{1}{30}$ gr.

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AND
Jaded Nerves

Neuro Phosphates has a world-wide reputation for combating nervous exhaustion, lowered vitality, and general debility resulting from prolonged physical or mental strain. It is the ideal reconstructive tonic in convalescence after illness, operation, or parturition.

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N2

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Supplies of calcium and phosphorus are essential to the action of vitamin D. Whereas ordinary calcium phosphate contains 1 part by weight of phosphorus to 2 of calcium, dicalcium phosphate contains 3 parts of phosphorus to 4 of calcium.

Each teaspoonful of Calcydic Granules contains—

Dicalcium phosphate 7½ gr.
Vitamin D - 1,500 units
Glucose, Chocolate, and Cane Sugar

These granules may be given to children or adults, prophylactically or therapeutically, in rickets, pregnancy, lactation, osteomalacia, menorrhagia, convalescence, chilblains, and urticaria.

Calcydic Granules are pleasant to take

In tins of ½ lb. at 2/3, and 1 lb. at 4/-
Plus Purchase Tax.

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IRON GRANULES

Being chocolate flavoured, FERRODIC Iron Granules appeal strongly to children who will not take ordinary iron preparations, such as Chemical Food. The iron is present in the ferrous state, being preserved from oxidation by the presence of reducing sugar (glucose).

FERRODIC Iron Granules contain a large proportion of this sugar, which gives the preparation a special value in ketosis ('acidosis'), a condition found in debilitated children. Sprinkled on bread and butter, the granules provide a solution to the problem of feeding children who have no appetite.

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A severe secondary anæmia is likely to be foremost among the complex disturbances occasioned by the onset of puberty in young girls.

In these cases of anæmias in young girls 'Plastules' gives prompt results in replacing the iron reserves of the body.

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IN TWO VARIETIES

- PLAIN (Ferrous iron & concentrated yeast)
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HÆMATINIC COMPOUND
FOR ANÆMIA AND DEBILITY

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(Sole distributors for Petrolagar Laboratories Ltd)

Trade Mark **VARISTAB** Brand

Ethanolamine Oleate

For the Injection Treatment of Varicose Veins

A stable 5 per cent. solution of Ethanolamine Oleate with 25 per cent. glycerin and 0.3 per cent. tricresol for the injection treatment of varicose veins. Extensive clinical trial has shown that Varistab produces extremely good permanent results. Injections are almost painless and there is no risk of allergic reaction. The usual dosage is up to 5 c.c. at each attendance.

Box of 5 x 5 c.c. ampoules - 3/4
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30 c.c. rubber-capped vial - 5/-

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Obtainable through all branches of

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SICCOLAM

For the treatment of inflammatory dermatoses

In a series of 60 cases of inflammatory conditions of the skin recently treated by means of Siccolam (Brit. Journ. Dermat. & Syph., June 1941, p. 177) it was found that '*none of these cases failed to respond, in some degree at least — the majority very favourably . . . in general, clinical improvement, viz. reduction of inflammation and pruritus, followed promptly, never later than one or two days after the first application*'.

The majority of the cases in the series were chronic dermatoses which had not responded to other methods of treatment over considerable periods and included subacute and chronic forms of eczema, Besnier's prurigo, seborrhœic dermatitis, intertriginous, dyshydrotic or mycotic inflammations, toxic dermatitis, urticaria, dermatitis herpetiformis and lichenoid exanthemata.

As marked improvement quickly followed the use of Siccolam it is concluded that this preparation is '*. . . superior to the many lotions, such as calamine, zinc oxide lotion, etc., so commonly used in this country hitherto for the same indications*'.

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BRAND OF CHLOROPHYLL TABLETS

has been before the profession now for fifteen years and has stood the test of time, and the developments indicated point to still greater usefulness for this product in the future"

Vide *The Prescriber* January, 1958

A Pamphlet entitled
"Hyperpiesia, Metabolic Disorders, and the Anaemias"
giving laboratory and clinical reports will be sent to Medical Practitioners on request

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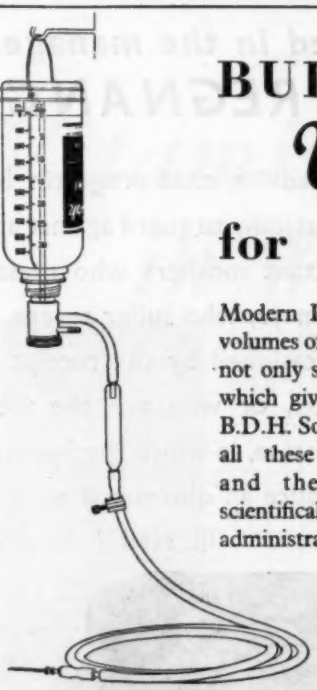

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Modern Intravenous Therapy requires the injection of large volumes of solutions. For this purpose it is necessary to employ not only solutions which are absolutely reliable but apparatus which gives the greatest simplicity and convenience in use. B.D.H. Solutions for Intravenous Injection in Vena-flasks meet all these demands — they are sterile and pyrogen-free, and the Vena-flask and accessories have been scientifically designed to ensure the greatest facility in the administration of the fluid.

A booklet entitled "The B.D.H. Vena-flask and its use in Intravenous Therapy" will be supplied on request.

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FOR WAR-TIME NERVE STRESS

The numerous reports that we have received from physicians show that Bynogen has met with considerable success in functional disorders of the nervous system accompanied by disturbance in nutrition.

Bynogen contains the glycerophosphates of sodium, calcium, magnesium, and iron, soluble milk proteins, and soluble extract of malt and whole wheat. The soluble milk proteins contain a large proportion of casein, which, in addition to the glycerophosphates, is a source of phosphorus. Calcium, sodium, and magnesium also play important parts in metabolism, while the necessity for iron in blood-formation scarcely calls for mention.

The agreeable flavour of Bynogen is one of its points of superiority over most other products of its class.

In tins at 1/9, and bottles at 3/-, 5/-, and 9/-

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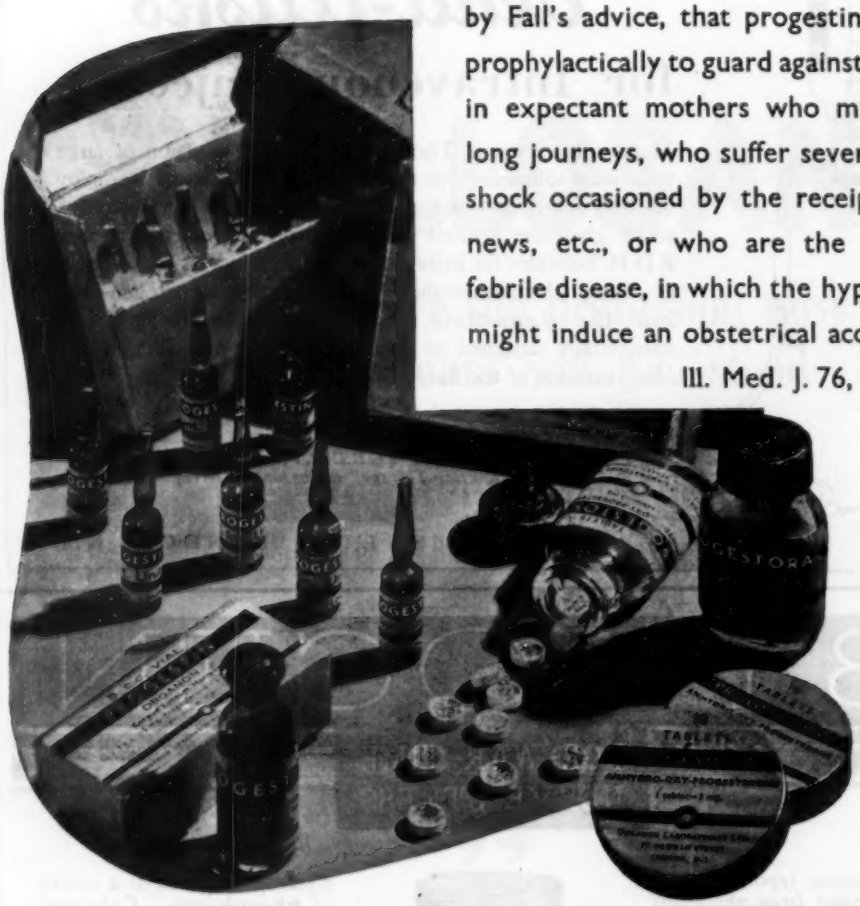
A NEW NOTE is sounded in the management of NORMAL PREGNANCIES

by Fall's advice, that progestin be used prophylactically to guard against abortion in expectant mothers who must make long journeys, who suffer severe mental shock occasioned by the receipt of bad news, etc., or who are the victim of febrile disease, in which the hyperpyrexia might induce an obstetrical accident.

Ill. Med. J. 76, 507, 1940.



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Samples available for specific cases

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Vitamin deficiency in Wartime diet

TYPES OF FOOD	A	D	B_1	B_2	PP	C	A	D	B_1	B_2	PP	C	TYPES OF FOOD
Fish Liver Oils	+	+	−	−	−	−	−	−	+	−	−	+	Citrus Fruits
Liver	+	+	+	+	+	+	−	−	+	+	−	−	Beans, Peas, Lentils
Fish Roe	+	+	+	−	−	−	−	−	+	+	+	−	Dried Yeast
Fish	−	−	−	+	+	−	−	−	+	+	+	−	Bran, Middlings
Egg Yolk	+	+	+	+	+	−	−	−	+	−	−	−	Buckwheat, Peanuts
Butter	+	+	−	+	−	−	−	−	+	−	−	−	Nuts
Milk	+	+	−	+	+	+	−	−	+	+	−	−	Wholemeal Wheat, Oatmeal, Rye, Barley, Rice
Cheese	+	+	−	−	−	−	−	−	−	+	−	−	Polished Rice
Fat of Mammals	+	−	−	−	−	−	−	−	+	−	−	−	Potatoes
Fat of Fish	−	+	−	−	−	−	−	−	+	−	−	also + Parsnips	Artichokes, Swedes, Parsnips
Heart, Kidney	+	?	+	+	+	−	+	low	−	−	−	+	Carrots
Lean Meat	−	−	−	+	+	−	+	low	+	−	+	+	Tomatoes
Green Veg.	+	low	+	−	−	+	−	−	−	−	−	+	Other Fresh Fruits

⊞ = PRESENT ⊟ = ABSENT

FOODS DEFICIENT IN ANY OF ABOVE VITAMINS

Vegetable oils, linseed and olive, almond and cotton seed oil, Nut Butters, Lard, Vegetable Margarine, Pork and Bacon Fat, Dried Fruit and Vegetables, Jam, Marmalade, White Bread, Flour, Cakes and Macaroni, etc. Pearl Barley, Cornflour, Egg Substitute, Sago, Tapioca, Sugar Products, Coconut, Beetroot, Brains, Tripe, Casein.

Good Health demands a sufficiency of Vitamins. In wartime a balanced diet—the source of vitamin supply—is difficult of achievement and the accompanying chart shows in which articles of diet certain vitamins are present. 'Wyamin' Vitamin Capsules are designed not as a specific in serious deficiency disease, but as a multiple vitamin supplement to the daily diet in wartime.

Each capsule contains a high potency of Vitamin A also D, B_1, B_2 Complex, nicotinic acid (PP Factor) and C.

Samples on request

'WYAMIN'

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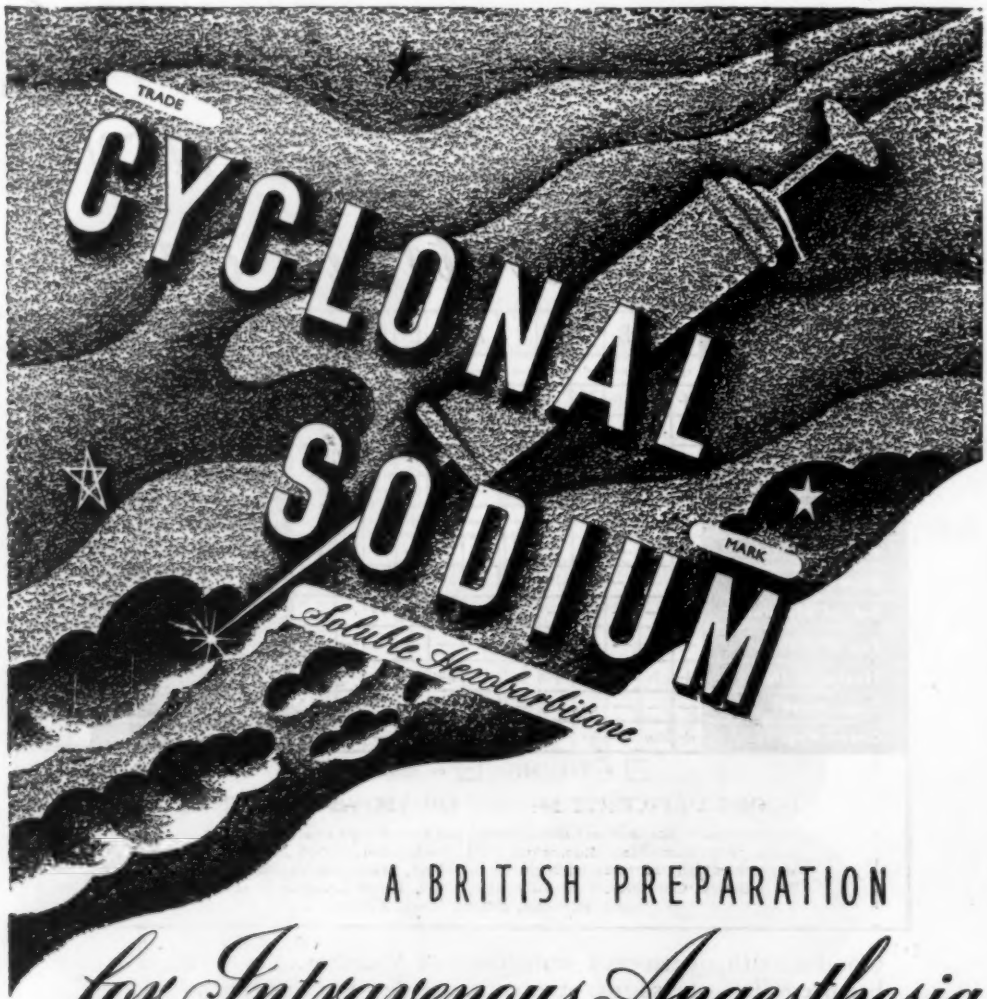

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for Intravenous Anaesthesia

Supplied in Boxes of 6 x 0.50 Gm. ampoules with 6 ampoules distilled water.

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Boxes of 25 x 1 Gm. ampoules with 25 ampoules distilled water.

M&B

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18

In Dermatological Conditions

such as Acne
Eczema
Psoriasis
Urticaria
Abrasions

and other inflammations of the skin, the attention of the physician is called to the use of

Antiphlogistine
BRAND TRADE MARK DRESSING

Made in England

It is Osmotic
Non-irritating
Bacteriostatic
Detersive
Anti-pruritic
Repair-promoting

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A thoroughly established therapeutic agent for the treatment of

RHEUMATISM · ENLARGED GLANDS AND GOITRE
ACTINOMYCOSIS · IODINE DEFICIENCY · THE
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together with wide application in GYNÆCOLOGY

PACKINGS AND PRICES

1 oz.	3 oz.	4 oz.	8 oz.	10 oz.	16 oz.	20 oz.	80 oz.
Oral (bottles)							
—	—	2/6	—	5/-	—	9/-	32/6
Oil (bottles)							
1/6	—	5/-	8/-	—	15/-	—	65/-
Ointment (jars)							
1/6	4/-	—	—	—	18/-	—	—

Injection: Ampoules (boxes of 6) and bottles 1 per cent, 0·2 per cent, 0·4 per cent, 0·8 per cent. *(Prices on application)*

Also issued in pasta, pessaries, pigmentum and suppositories.

The importance of iodine, with its almost unlimited application in widely differing conditions, cannot be over-estimated.

Collosol Iodine is a loose colloidal compound capable of administration by either the oral, subcutaneous or intravenous route without fear of a sudden and immediate liberation of free iodine.

In the form of Oil, *Collosol* Iodine, with its properties of swift, deep penetration, is of pronounced value in the treatment of enlarged glands, goitre, eczema, etc. Full clinical literature available on request.

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For basal narcosis by rectal administration

'WELLCOME' BROMETHOL

BRAND

A 66·66 per cent. w/w solution of tribromoethyl alcohol in amylene hydrate

Bromethol is a basal narcotic of great value in general surgery and, owing to its comparative safety, in gynæcology and obstetrics. Because it has no irritant effect on the respiratory passages it is particularly useful as an anæsthetic in cases of asthma, bronchitis and pulmonary disease. In lower abdominal operations Bromethol, followed by a general anæsthetic, tends to diminish pulmonary complications. Its depressant action on the central nervous system has been used with advantage in the symptomatic treatment of chorea, angina, delirium of pneumonia, acute alcoholism and spasms of tetanus and strychnine poisoning.

Children tolerate the drug extremely well and it may be given as a complete anæsthetic with confidence.

Trade Mark 'WELLCOME' Brand BROMETHOL

Bottles of 25 c.c. and 100 c.c., 15/- and 54/- each respectively.

Trade Mark 'WELLCOME' Brand CONGO RED SOLUTION

1 in 1000, is also available for use as a test indicator with 'Wellcome' Bromethol.
Bottles of 10 c.c., with Pipette, 1/- each.

London Prices subject to Medical discount

BURROUGHS WELLCOME & CO.
(THE WELLCOME FOUNDATION LTD.)
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FOOD and VITAMINS

The regimenting of diet in wartime gives new and special significance to the fact that, apart from being the richest natural source of vitamin B_1, Bemax is a food of high protein and mineral value. The usual helping of Bemax (one tablespoonful) provides not only the equivalent in protein of beef and the calorific value of cheese, but also the high vitamin content of approximately 200 i.u. vitamin B_1 (400 i.u. per oz.) which has given Bemax its outstanding position as a dietary adjunct. *No other food is as rich in vitamins as Bemax.*

To use Bemax as the first course at breakfast involves little, if any, increase in the household expenditure. In present circumstances the advantage of ensuring adequate vitamin B_1 in this way rather than by supplementary dosing with B_1 concentrates is apparent.

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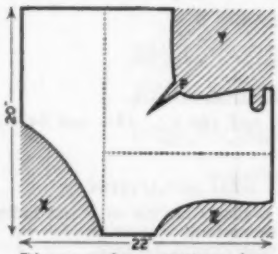

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ORIGINAL ARTICLES

FOUR PHASES OF BIRTH *

SIR JOSEPH BARCROFT, M.A. Camb., F.R.S.

UNTIL the last two or three years little has been added to the meagre knowledge of the physiology of birth possessed by our forefathers. This may seem strange, for each of us depends for our very existence on its successful negotiation. Millions have died who might conceivably have lived, given greater knowledge on the part of the responsible people. Yet there are reasons for the want of progress; at any particular birth the attention of those concerned is completely and rightly concentrated on the effort to get that individual child into the world as satisfactorily as possible and they have little opportunity for observation and less for experiment. What I shall say towards the more accurate description of birth falls under four headings:

1. Birth might be described as a change in the atmosphere in which the fœtus lives: the external atmosphere, that with which its skin is in contact, and the internal atmosphere, which for our purpose is essentially that to which its brain is subjected.

2. At birth a considerable volume of blood seems to be transferred from the placenta to the fœtus. I shall discuss the reasons which account for an excessive quantity of blood being in the fœtal circulation just before birth, the extent of the plethora, why the redundant blood is transferred to the neonatal organism and its fate when it gets there.

3. The change in conditions means that on birth the blood must acquire its oxygen from the air instead of from the placenta; therefore, on birth, a great quantity of blood must be circulated through the lung. Up to birth, on the other hand, the pulmonary circulation is functionally redundant and is actually short-circuited.

4. There is the all-important subject of the first breath.

THE CHANGE IN ATMOSPHERE

The external environment of fœtal life is the amniotic fluid and this presents the minimum of contrast to the fœtus itself. The composition of the amniotic fluid is not unlike that of the body fluids of the fœtus; the temperature of the amniotic fluid does not differ materially from that of the embryo. For these reasons, even though the sensory nerve-endings of the mature skin are capable of abundant stimulation, little in the way of

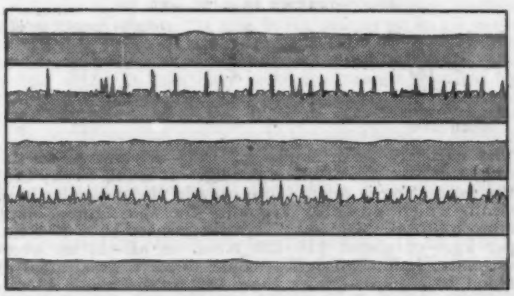

FIG. 1—Record of muscular tone in fœtus of sheep at 144 days. Respiration maintained through umbilical cord. a, c, e, fœtus in bath; b, d, fœtus out of bath.

stimuli pass their way. We have no exact knowledge of degree of excitation of the fœtal cutaneous nerves, but in the absence of direct knowledge we have interesting information of a secondary character; we have evidence of happenings in the embryo, presumably reflexes, of which the cutaneous sensory nerves form the afferent paths. Fig. 1 is a tracing of the electric variations in the muscle of a fœtus. The fœtus (preserving its relation with the placenta) was alternately in a bath of saline at its own temperature, and in the air above; these changes simulated in a crude way the alteration in the external environment which takes place at birth. Each spike in the tracing represents the contraction of a muscle-fibre in the region adjacent to the electrodes which picked up the current. When the fœtus was in the salt solution no muscular fibres were contracting; once the fœtus was lifted into the air, abundant contraction took place. In fewer words, the existence or otherwise of muscular tone was largely dependent on a tempest of stimuli from the skin, which stimuli do not occur when the embryo is in an isotonic fluid medium at the fœtal temperature.

Our knowledge of the internal environment chiefly concerns oxygen. The fœtus (I allude principally to its brain) has an oxygen supply adequate for existence, but not adequate for sustained effort; after it is born it has an oxygen supply adequate for both. As some criterion of the adequacy of an oxygen supply it may be said roughly that if the organism can undergo any sustained exertion without lowering the oxygen content of its arterial blood the supply is adequate; if, on the other hand, the arterial blood blackens when the creature exercises its muscles with the activity of which they are capable—that is, if the oxygen in the arterial blood falls in exercise—not only are the contracting muscles and heart faced with the prospect of oxygen debt but the brain is faced with a "blackout." For example, no athlete by running can alter the normal bright red colour of his arterial blood; but I have seen the blood of an extremely fit person go dark and his face become intensely cyanosed at an altitude of 15,000 feet, when he undertook mild pedalling exercise on an ergometer. The same is true of animals suffering from experimental pneumonia due to poison gas, and indeed in cases of chlorine poisoning. Applying this yard-stick to the fœtus, the answer is unambiguous: it may be questioned whether the blood of the embryo at birth is oxygenated even up to the standard that would suffice for what would be normal resting conditions in a born animal. The blood of the carotid artery contains only about half the amount of oxygen which it is capable of carrying. Such a concentration of oxygen in man would be incompatible with clear thought and possibly even with consciousness, but not incompatible with the inhibition of random movements and with reflexes of a lower order.

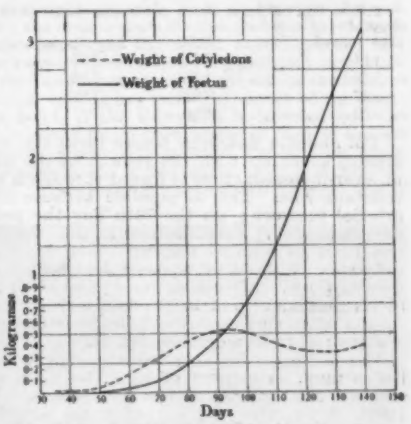

FIG. 2

How comes this very restricted prenatal oxygen supply? It is caused by the needs of a rapidly growing fœtus outrunning the relatively fixed possibilities which exist of its obtaining oxygen from its mother. The capillary systems of the two bloods are in close juxtaposition in the placenta and the oxygen diffuses from that of the mother to that of the fœtus, through the intervening tissue. Inquiry into the conditions for such diffusion elicits some surprising facts. First, the placenta (in the sheep, at least) reaches its maximum weight not at the end of pregnancy, when the fœtus makes its greatest demands, but after the elapse of only about two-thirds of the whole period of gestation. The period in the sheep is 147 days, and the placenta is at its maximum weight at about the 100th day (fig. 2). The fœtus at the 100th day is quite small, perhaps one-eighth

* Abstract of the Sharpey-Schafer lecture given at the University of Edinburgh on Feb. 28.

of its size at birth. Secondly, the quantity of blood in the placenta at any one time does not increase appreciably during the last third of pregnancy. The volume of the fœtal capillary bed in the placenta remains more or less constant during this period yet the total quantity of blood in the fœtal circulation increases about six-fold (fig. 3). It is as though a grown man had a lung no larger, and containing no more blood, than that of a year-old infant.

The placental bed at 100 days is much larger than is necessary for the fœtus of that age—in short, the placenta is organised ahead of its immediate utility. But why is a still larger placental bed not required for the full-grown fœtus? The problem is emphasised when we turn from the volume of blood in the placenta to the quantity which runs through it per minute.

F.B. = Vol. of fœtal blood traversing placenta of sheep per min. (c.cm.)

Age (days)	F.B.	Age (days)	F.B.
111	111	137	568
126	218	138	284
127	162	152	300
129	600		

Till about a fortnight before birth the volume of the stream keeps up with the growth of the fœtus, so that an ever-increasing flow is forced through a bed of almost constant size. This is possible because of the rise of arterial pressure; on the 76th day the pressure in the umbilical artery exceeds that in the umbilical vein by less than 10 mm. of mercury; on the 138th day the difference is about 40 mm.—a four-fold increase in the driving force. A week or two before birth the stream is at its maximum and in the last fortnight or so nature resorts to one further device to improve oxygen transport: a sharp rise in hæmoglobin (fig. 4).

The provision for an adequate oxygen supply to the fœtus may, in respect of time, be divided into three stages: the growth of the placental bed, up till the 100th day; the increase of fœtal arterial pressure, mainly after the 100th day till about the 130th day; and the increase of hæmoglobin in the last fortnight. Yet in spite of all these mechanisms the position is always

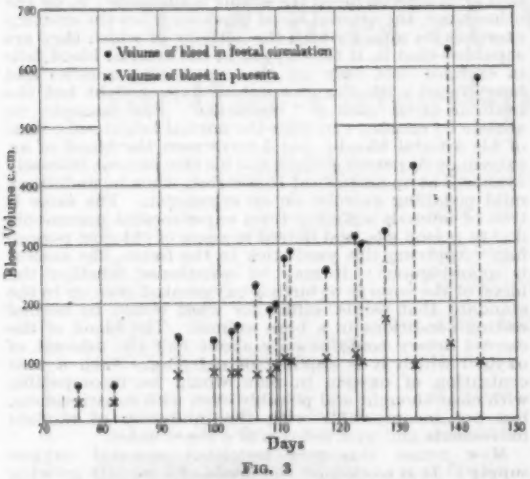

FIG. 3

deteriorating. The provision which at 100 days was more than good enough for the fœtal needs is by the 147th only just sufficient, even after it has been exploited in every way. At the 80th day, and for a considerable time after that, the fœtus is living at what I may call the high alpine level; its carotid blood is oxygenated about as completely as that of a person living at 15,000 feet (roughly the summit of Mont Blanc); by 130 days it has passed the Andean level, and reached that of the Himalayas; at birth it is under Everest conditions, perhaps even more stringent ones. The fœtus, as it grows to maturity, suffers, like the mountaineer, from an increasing degree of oxygen want; unlike the mountaineer, it cannot meet that situation by panting. How far it can be said to acclimatise is not known, but at all events the experience of the alpinist, so far from being novel, is one to which he was subjected in his mother's womb.

Within four minutes of birth all this is changed. I well remember the joy with which I ran down the Peak of Teneriffe, prompted by the exhilaration of the inhalation of continually increasing quantities of oxygen; yet it took me about half an hour to get down to 5000 feet.

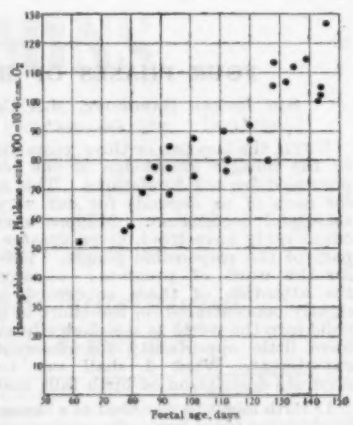

FIG. 4

The fœtus makes its descent—a far greater one—within four or five minutes, as was shown by a continuous record of the oxygen in its arterial blood as it was subjected to cæsarean section. Before birth it is doubtful whether the fœtal brain was capable of consciousness, even if there were anything to be conscious of; during birth the fœtus must have undergone a positive blackout, yet in but a few minutes the lamb is fully conscious and in a few more it can get up and walk.

TRANSFER OF BLOOD FROM THE PLACENTA AT BIRTH

We have seen that for some weeks before birth the fœtal vessels had held 100–150 c.cm. of blood. At birth most of this is transferred to the fœtus, presumably by contraction of the umbilical and placental vessels; in the sheep, at all events, with its cotyledonous placenta, the increased muscular tone of the uterus has, I imagine, little effect on the fœtal circulation. Two sets of lambs of comparable weight may be compared in respect of their blood-volume (Barcroft and Gotsev 1937)—first, those naturally born and within a few hours of birth; secondly, those born at term by cæsarean section, the cord being tied as rapidly and with as little interference to the placenta and to the lamb as possible. Here are three such comparisons:

BLOOD-VOLUME IN C.CM. PER KG.

Lambs naturally born	Lambs born by rapid cæsarean section
168	153
161	119
168	108
Mean 166	127

The naturally born lambs had the advantage to the extent of 39 c.cm. of blood per kg. It is fair to say that the estimation is much more easy in the naturally born lamb, which probably accounts for the figures being more uniform. But even it it be granted that 39 c.cm. per kg.—or about 110–120 c.cm. in all—is an overestimate, half that figure would mean a great deal of blood to a lamb—more than 10% of its whole blood-volume.

When the cord is tied near the umbilicus in a cæsarean section, a considerable pressure rapidly develops in the umbilical vessels. This is due to their muscular walls contracting down on the blood. If incisions be made in the vessel walls near the ligature blood gushes and it is easy to collect it in a measuring cylinder. Three such experiments gave 75 c.cm., 83 c.cm. and 80 c.cm. Judging from the pressure at which this blood is forced out, it seems unlikely that less is expelled into the fœtus during a normal birth.

Why should the greater part of the blood in the placenta be transferred to the lamb at birth? An easy reply would be that as the placenta goes out of action the lung comes in, and that whichever organ of respiration is used, be it the placenta or the lung, the blood is necessary for it, but it is not certain that this simple explanation

covers the facts. It has yet to be proved that the fœtal lung is deficient in blood; the blood may not be circulating at a great rate but we know nothing really about the amount of blood in the fœtal lung except that the lung looks pretty vascular even in the embryo. One reason why more blood may be wanted by the lamb than by the fœtus is that many abdominal organs, which have not functioned to any great extent in fœtal life, now become functional and presumably require blood.

What casts doubt on all the above hypotheses is the fate of the blood after it arrives in the lamb. Gotsev (1939) found in 2 out of 3 lambs that about 10% of the hæmoglobin with which they were born disappeared from the circulation; as far as we know it is broken down, the hæmatin portion being partly excreted as bilirubin and the iron stored in the liver. Why overload the lamb's circulation with corpuscles that are at once to be broken down and perhaps give rise in exaggerated cases to icterus neonatorum? For the sake of the iron. Bunge many years ago called attention to the limited store of iron available to the baby during the months of suckling. The initial store which is conferred on it at birth seems to be set aside against the day, which soon comes, on which iron is wanted for the formation of fresh hæmoglobin, and indeed for many cell enzymes into the bargain.

ALTERATIONS IN THE THORACIC CIRCULATION

After birth each complete circuit of the blood consists of alternate phases, through the systemic and pulmonary circulations respectively. In the fœtus such a sequence would be functionally redundant. There is no point in driving masses of blood through a lung in which no exchange of gases takes place, therefore in the fœtus the lung is short-circuited. Yet as soon as the fœtus is launched on the world the lung must function. The greatest economy will clearly be attained in a system which provides for the most efficient short-circuiting before birth compatible with the least possible degree of short-circuiting immediately birth takes place.

There are in the fœtus two by-passes; if blood passes through either of these, it will evade the lung. The first is the foramen ovale, in the septum between the right and left auricles. Blood arriving in the right auricle can pass through the foramen ovale into the left auricle, thence to the left ventricle and on to the aorta, thus cutting out the lung. The second by-pass is the ductus arteriosus springing from the pulmonary trunk and entering the aorta just beyond the aortic arch. Blood reaching the right side of the heart can pass to the right ventricle, up the pulmonary trunk, and through the ductus arteriosus to the dorsal aorta. The blood which reaches the systemic system by this route cannot go to all parts of the body: it cannot go to the head, the arms, the coronary system or any vessel springing from the aortic arch; it can only go to the vessels supplied by the dorsal aorta. Both these by-passes have medical importance, because one or other may remain patent with corresponding prejudice to the circulation. Probably because it is rarely seen in the dissecting-room except as represented by a strand of connective tissue, two erroneous ideas are prevalent about the ductus arteriosus. First that it is small and that the foramen ovale is the important by-pass; and secondly that it closes by a process of cicatrisation taking weeks or months. In an experiment carried out by my colleagues Dr. A. E. Barclay, Dr. D. H. Barron and Dr. K. J. Franklin thorotrast was injected into the femoral artery of a rather decrepit fœtus; because of the low fœtal blood pressure it passed upwards against the stream, entered the aortic arch and the ductus arteriosus. An X-ray cinema film showed that the bore of the ductus is at least as large as that of the dorsal aorta.

Has any particular corpuscle on reaching the right side of the heart the same chance as any other corpuscle of passing through a particular by-pass? One school holds that all the blood reaching the right side of the heart from whatever source becomes thoroughly mixed in the right auricle, the other and older school holds that the blood reaching the heart via the inferior vena cava on the whole passes through the foramen ovale, and so to the aortic arch, while that arriving from the superior vena cava passes into the right ventricle and up the pulmonary trunk and thence either through the ductus to the dorsal aorta or through the lung, but not along the aortic arch. The implication in this second view affects the blood from the placenta which goes either directly or by way of the liver into the inferior vena cava and which therefore brings the heart the reddest blood reaching it; this blood goes, with little admixture, through the foramen ovale to the left heart and the aortic arch, so that the organs supplied by the aortic arch have a first option on such oxygen, sugar and so on as reaches the circulation; apart from the liver the organs in question are those which matter in fœtal life—the heart muscle, the brain, the thyroid and the thymus. It is possible to judge between the two schools by the method of X-ray cinematography.

If thorotrast is injected into the superior vena cava, the whole of the opaque material goes straight through the right auricle, into the right ventricle, and up through the pulmonary trunk; the stream there divides, part flowing through the ductus arteriosus into the dorsal aorta and the rest through the pulmonary arteries into the pulmonary circulation (fig. 5A). No thorotrast appears on the left side of the heart or in the aortic arch until it has made the circuit of the lungs. On the other hand, if the thorotrast is injected into the inferior vena cava the major part passes at once to the left side of the heart, presumably through the foramen ovale, and appears immediately in the aortic arch and brachiocephalic artery. The minor part passes into the right side of the heart and up the pulmonary trunk. The head therefore has a first call on the most oxygenated blood.

A B

FIG. 5—(A) Radiogram taken before ligation of the cord in the lamb; (B) taken 4 minutes after ligation of the cord. In each case thorotrast has been injected into the superior vena cava giving a light shadow both in it and the right ventricle, and a dense shadow in the pulmonary trunk, the pulmonary artery, the ductus arteriosus and the dorsal aorta. In (A) the junction of the ductus and the aortic arch can be seen at the lower margin of the rib. The ends of the ductus are marked by two white lines. In (B) the shadow extends into the pulmonary artery but not into the ductus or aorta.

The closure of the ductus also has been investigated by Dr. Barclay's X-ray cinema. Cæsarean section was performed in the sheep, which and the following facts were revealed. At delivery, and indeed for a short time after it, the ductus remains fully open, but when the umbilical cord is tied the picture rapidly changes; within 4 minutes the ductus is completely closed, or at least is closed to the point at which the lumen admits of no stream large enough to cast a shadow (fig. 5B). It may, as far as we know, never reopen, or it may oscillate for a while between absolute closure and trivial patency, but it never allows more than a nominal quantity of blood to pass. The time relations of the closure are those of a sphincter such as the cardiac sphincter of the stomach and not those of a cicatrisation. These time relations are consistent with the structure of the ductus, which differs from the neighbouring arterial wall; the muscle of the sphincter is there for anyone with a microscope to see and nerve-endings may be seen in it. In fact the sphincter is part of the vasomotor system. The physiological occlusion as time goes on is followed by a conversion of the muscle into connective tissue.

A different method is needed to investigate closure of the foramen ovale. If the blood in the left ventricle (and consequently in the carotid artery) is completely arterial—if the hæmoglobin is 100% oxyhæmoglobin and if there is no reduced hæmoglobin present—all that blood must come from the lung and none can come from the great veins through the foramen ovale. This state is actually reached within 4 or 5 minutes of the ligature

of the umbilical cord if the fœtus is breathing an atmosphere of oxygen (Barcroft, Kramer and Millikan 1939). Thus the foramen ovale must close within the same period.

The X rays give us what little information we have about which is the first to close, the ductus arteriosus or the foramen ovale.

Lipiodol was injected into the inferior vena cava of a newly born lamb; it divided into a major and a minor stream, the former passing to the left side of the heart through the foramen ovale, the latter into the right side. The first stream soon ceased, which seemed to show that the foramen ovale had closed; all the lipiodol now went into the right ventricle and was seen to traverse the ductus, so reaching the dorsal aorta. Finally the path was diverted again and all the lipiodol went into the pulmonary circulation.

So far as this single experiment can be trusted, the sequence of shutting is: first the foramen ovale, second the ductus arteriosus. In any case, after 5 minutes, almost the whole venous inflow (apart from the pulmonary veins) seems to go through the lung before it reaches the left side of the heart.

THE FIRST BREATH

There is a paradox about the first breath as there is about the maiden voyage of a steamship. That voyage is the initiation of the functional life of the vessel; in this sense it is the initial effort of the steamer, but behind it is a background of trial trips, assemblage of parts, fitting of machinery and all the rest. So it is with the first breath; true, it is the first time that air is taken into the lungs, if only because the fœtus has never been exposed to air; but the movements responsible for that inhalation have a history which can be traced back to the very first efforts of which the fœtus was capable.

That first effort is a simple reflex (Barcroft and Barron 1939); it appears on the 34th day of fœtal life in the sheep. If the embryo at that time is sharply tapped under the eye it will turn its head, with the nose towards the side on which it is struck. No other skin area will elicit a movement, no other movement takes place when the locality in question is struck. Actually the locality is the skin area covering the point to which the maxillary branch of the fifth cranial nerve has grown. The whole functional nervous system is then a single reflex arc, with the maxillary branch of the fifth nerve as its receptor, a neuron which involves the reticular formation in the medulla as its cell station and the efferent fibres which supply certain neck muscles as the effector. This functional nervous system spreads as the days of gestation go by; about a week later four things have taken place (Barcroft 1939): a much gentler stimulus will elicit movement; the skin area, stimulation of which will produce movement, is much greater and notably involves the nose to which the fifth nerve has now grown; the muscles involved in the response are so numerous as to transform the simple movement into a spasm; and the response is not merely one spasm but a rhythm consisting of perhaps twenty spasms, each of which looks like a little gasp.

By the 49th day the mechanism has become so delicate that only with difficulty can the fœtus be held still enough to preclude the development of these rhythmic spasmodic efforts. Both the extent and the frequency of the rhythm depend on the severity of the stimulus; a gentle stimulus will cause only rhythmic contraction of the respiratory muscles—the diaphragm, the intercostals and the laryngeal muscles—while a strong stimulus will elicit a more rapid rhythm and one which extends to a great part of the body. The first spasm in the response to a strong stimulus has properties which are not repeated in those which follow. If the fœtus is on its side it will turn its head crown upward, throw it back and with its feet make a complex movement which looks like a crude effort to get up; the whole procedure indeed closely resembles the first effort to rise made by the lamb. There is then sometimes a slight pause and the subsequent movements are of the rhythmic type which we have seen in younger fœtuses. The whole syndrome presents the appearance of an effort to get up followed by a fit of breathlessness. Thus even a third of the way through pregnancy the essential neuromuscular mechanism has been laid down, and as it were tried out. Not the least remarkable feature of these spasmodic rhythms of the respiratory type is their relation to asphyxia. So far from asphyxia being able to stimulate them, the reverse is the case; asphyxia has no other action than that of a depressant, and in time would extinguish them entirely.

Between the 50th and 60th day the activities of the embryo undergo a remarkable change. Instead of being so active that the slightest touch or movement starts a burst of rhythmic activity, it is now almost inert. At first sight it conveys the impression of being moribund, and doubtless for this reason its latent activities have not been more fully realised; for though a number of observers have described movements of a respiratory type in embryos their significance has not hitherto been grasped. If the healthy fœtus of 60 days gives the impression of lacking the power of movement, there are three ways of waking it up: by asphyxia; by exposure; and by appropriate surgical section of the brain.

The new development which is responsible for the quiescence of the 60-day fœtus is the appearance of inhibition; this is due to the grip exerted on the lower portions of the brain by a centre at a higher level. The secret of asphyxia is that it depresses this seat of government and liberates the lower centres from its dominion. In effect then the rôle played by asphyxia is functionally to convert the 60-day embryo into one of 50 days. Exposure acts in a similar way.

The general position, geographically, occupied by the inhibitory centre is revealed by surgical procedure. Dr. Barron has succeeded in transecting the central nervous system in fœtuses of 50–80 days without interfering with their growth or affecting the date at which they are born. A fœtus in which section has been done half way up the forebrain has, like one subjected to a small degree of asphyxia, lost its inhibition and exhibits a rhythm of the respiratory type on the smallest provocation.

During the last two-thirds of the gestation period there is, then, a constant battle between the warring elements of the fœtal brain, the lower part of which is tending to give movement—respiratory movement at that—and the upper part of which is all for quiet, and the upper part normally wins during gestation.

There are other important forces which must not be lost sight of. They are on the side of movement, and during intra-uterine life are in abeyance. These are the sensory impulses caused by stimulation of peripheral nerves, and among them the fifth cranial nerve—that which initiated the first movement—always holds a special place. As long as the fœtus is in the amniotic fluid the peripheral impulses do not come into action or come in only to a slight extent because there is so little in the environment to excite them. The effect of wholesale peripheral stimulation, however, would be to raise the sensitivity of the brain and so give it a bias towards action. These then are the forces marshalled on the two sides: for quiescence the inhibitory mechanism; for movement accidental stimuli from the nose, mouth, skin or muscles reaching a brain of exalted sensitivity, exalted by the general mass of peripheral stimuli.

In that setting the lamb appears. The inhibition of the fœtus is abolished or reduced by the suspension of the placental circulation; stimulation inevitably occurs and is amplified, as it were, by the heightened sensitivity of the nervous system. Then response takes place. That response is the old movement developed 100 days previously in the embryo, which is now no longer a spasmodic movement in a fluid medium but a gasp which expands and draws air into the lungs; it is the first breath.

SUMMARY

During the latter half of the period of gestation in the sheep the quantity of fœtal blood in the placenta remains relatively constant, while that in the fœtus increases with the growth of the placenta as much as 6–8 times. The growing needs of the fœtus are met, in the placenta, by an increased rapidity of blood-flow and by increasing quantities of hæmoglobin in the blood.

A considerable volume of the fœtal blood circulating in the placenta is transferred to the fœtus at birth. The excess of corpuscles is broken down and the iron is stored.

Evidence is given of the functional closing of the foramen ovale and the ductus arteriosus within a few minutes of birth.

Evidence is also given showing that the essential neuromuscular mechanism for drawing the first breath is laid down between the 34th and the 50th day of gestation, and that asphyxia, far from stimulating the early spasmodic rhythms of the respiratory type, actually depresses them. At this stage exposure or asphyxia excite no activity in the embryo.

By the 60th day of gestation higher levels of the brain have developed sufficiently to inhibit the lower centres; so that the 60-day fœtus appears much more inert than the active 50-day fœtus. Asphyxia depresses the higher centres and liberates the lower centres, thus converting the inert 60-day fœtus functionally to the active 50-day fœtus. Exposure has the same effect.

At birth the lamb experiences both partial asphyxia—because of suspension of the placental circulation—and exposure. It responds with the respiratory movement which it developed some 100 days before. Sensory impulses from the skin heighten the tendency towards respiration.

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AMMONIA-GAS POISONING

FORTY-SEVEN CASES IN A LONDON SHELTER

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EARLY in September, 1940, during a heavy air-raid on London, a large brewery whose cellars were being used as a shelter received a direct hit from a bomb. The damage to the building was not severe, but a fragment of flying metal pierced the connecting pipe of an ammonia condenser in the corner of one of the cellars, and gaseous ammonia was set free. This spread rapidly through the crowded shelter, and it was about ten minutes before an employee of the brewery wearing an oxygen respirator was able to shut off the condenser.

First-aid parties arrived almost at once and performed their duties ably. Most of those affected by the gas were able to leave the building without help, but a few had to be brought out by the first-aid parties who entered the gas-filled cellars, some wearing civilian others civilian-duty respirators. First-aid posts dealt with a large number of cases, some of which were considered sufficiently serious to need hospital treatment.

This account describes the signs, symptoms, treatment and subsequent course of some of the cases admitted to St. Leonard's Hospital. In all, 75 cases were admitted, but owing to the rapid evacuation to base hospitals and the difficulty of obtaining case-notes after transfer, only 47, representing in the main the more serious cases, could be traced satisfactorily.

CLINICAL FEATURES

Clinically, the patients could be divided into three main types—mild, moderate and severe—depending on the extent of involvement of the respiratory tract. The mild and moderate cases were mostly a considerable distance from the ammonia condenser at the time of the explosion and were able to leave the shelter unaided. Those in the severe group were resting near the condenser, and were among the last to leave, many of them being so overcome as to need help from first-aid parties.

Mild group.—This comprised 9 patients with mild catarrhal symptoms, the inflammatory process being limited to the conjunctivæ and the upper respiratory passages. The patients complained of a smarting sensation in the eyes and mouth, pain on swallowing, and some of a tightness in the throat. All were very hoarse and could hardly raise their voices above a whisper. Cough was not a prominent feature. There was no shock or distress, the colour was good and the temperature and pulse-rate were not raised. The conjunctivæ were suffused and there was swelling of the eyelids. The lips, mouth and tongue were intensely reddened, dry and raw looking, and there was a strong smell of ammonia in the breath. The fauces presented a similar picture with the addition of œdema. No adventitious sounds were heard on auscultation of the chest.

Moderate group.—In this, the largest group, there were 27 cases who showed the effect of more severe or prolonged exposure to the gas. Here, in addition to an exaggeration of the signs and symptoms present in the mild cases, there were moist sounds in the chest, suggestive of an extension of the inflammatory process to the bronchi and bronchioles. There was smarting of the eyes, mouth and throat, together with a feeling of tightness in the chest, hoarseness and dysphagia. Cough was prominent and productive of tenacious and, sometimes, blood-stained sputum. There was no vomiting. The colour was good, the pulse was strong and rapid, but the patient looked ill. There was some restlessness with a slight increase in the respiration-rate, and in some the temperature was raised one or two degrees. The conjunctivæ were hyperæmic and there was much lacrimation with swelling of the eyelids. The lips, mouth, tongue and fauces resembled the picture seen in the mild type, but here œdema was more pronounced and there were dark red glazed patches scattered over the buccal mucosa indicating areas denuded of epithelium. Auscultation of the chest revealed a poor air-entry with rhonchi, in some cases localised, and in others fairly generalised.

Severe group.—There were 11 cases in this group, exhibiting signs and symptoms of pulmonary œdema, evidence of still further extension of the inflammatory process to the lung parenchyma. On admission they were shocked, restless and obviously distressed. There was slight cyanosis, intense dyspnœa and persistent cough with much frothy sputum. The pulse was rapid and of poor volume and the temperature was not raised. The condition of the eyes, mouth and fauces was similar to that seen in the moderate cases. The neck veins were not distended. Generalised râles and rhonchi were audible in the chest.

TREATMENT

The first aim was to combat shock and to relieve restlessness and dyspnœa in the severe cases; the second, to neutralise liquid ammonia present on the buccal mucosa, evidence of which was the strong ammoniacal smell in the breath; and the third, to relieve conjunctival and buccal pain. All patients were put to bed, and in severe cases where shock and restlessness were present electric cradles were provided and morphia gr. $\frac{1}{4}$–$\frac{1}{3}$ was given, the smaller dose where cyanosis and dyspnœa were evident. Oxygen was administered by intranasal catheter to patients showing any sign of cyanosis. Where moist sounds in the chest were pronounced, an injection of atropine gr. $\frac{1}{75}$ was given and repeated two-hourly.

The ammonia was neutralised with ordinary table vinegar, which was diluted one part in four with warm water and given as a mouth-wash and gargle. After this, liquid paraffin was applied on a swab to soothe the roughened mucous membrane. In the moderate and severe cases, where pain and œdema of the mouth and throat were more troublesome, a cocaine and adrenaline spray was used. The eyes were irrigated with boric lotion and were instilled with a few drops of castor oil. Cocaine was not used in the treatment of the eyes.

SUBSEQUENT COURSE

Owing to the severity of the air-raids on London at that time, and the need to keep beds clear, rapid evacuation to base hospitals was essential, though the clinical condition of some of the patients would in normal times have made one doubt the wisdom of transfer. The subsequent course of the transferred patients was gleaned from their case-notes which were made available to me after their discharge; I had no personal contact with these patients after they left St. Leonard's Hospital.

Mild group.—The 9 cases in this group obtained considerable relief from the measures already outlined, and after a few hours' rest in bed they were fit for

discharge. They were typical of those who received treatment at the first-aid posts, and therefore of most of the gas casualties.

Moderate group.—Of the 27 cases in this group, 24 showed improvement after treatment, and these were evacuated ten and thirty hours after admission. The 3 remaining cases showed great deterioration in their clinical condition and were detained at St. Leonard's Hospital. Within six hours of admission they became cyanosed, and dyspnœa and restlessness increased. Clinically they resembled closely patients admitted with pulmonary œdema, and were treated in like manner. In spite of treatment, their general condition gradually worsened, cyanosis and restlessness becoming still more severe. Finally, they became comatose and died within thirty-six hours. Post-mortem examination was not performed. In 9 of the 24 patients who were evacuated, signs and symptoms of bronchopneumonia appeared on the second and third days. All these cases received M. & B. 693 in addition to routine treatment; 6 recovered while the remaining 3 died within two days of the onset of symptoms. An autopsy was done in 2 of these cases.

Case A. B.—Male, aged 66. Mouth: fauces, pharynx and larynx intensely inflamed. Trachea and bronchi: inflamed and filled with purulent exudate. Lungs: adhesions on both sides from old pleurisy. Deeply congested lungs and patchy areas of bronchopneumonia. Heart: nothing abnormal.

Case C. D.—Male, aged 47. Trachea and bronchi: denuded of epithelium. Lungs: bronchopneumonia and pulmonary œdema.

The remaining 15 patients made a relatively uninterrupted recovery, the average period in hospital being eight days. In most the conjunctivitis improved rapidly without further treatment, but in the more severe cases boric irrigations and castor-oil instillations were continued daily. Severe corneal ulceration was noted in 2 patients. In 12 cases at the Royal Free Hospital half were observed to have corneal ulceration on admission but this was not seen in those treated at St. Leonard's Hospital where fluorescein was not instilled, so that corneal ulceration in mild degrees may have passed unnoticed. Ulceration with slough formation inside the mouth was a common feature and responded rapidly to mouth-washes. Hoarseness was persistent and was still present on discharge from hospital. Laryngoscopic examination was not performed in these cases. The bronchitis improved gradually and cleared, on the average, within seven days. The mortality-rate in this moderate group of 27 cases was 22%. Three cases died from what appeared to be delayed pulmonary œdema, and 3 from bronchopneumonia, though as the post-mortem evidence in one of these cases showed, pulmonary œdema was associated with the bronchopneumonia.

Severe group.—In this group 4 patients gradually went downhill. They became more cyanosed and dyspnœic and died within forty-eight hours of admission. The remaining 7 cases improved slightly under treatment and were transferred within ten hours of arrival to the base hospital. Of these, 4 continued to improve and were discharged after an uneventful course about nine days later, and 3 became steadily worse and pursued a similar course to that of the patients in this group who were detained at St. Leonard's Hospital. They ultimately died within forty-eight hours of being transferred. An autopsy was performed in two of these cases.

Case E. F.—Female, aged 37. Mouth: fauces, pharynx and larynx intensely injected and covered with purulent exudate. Lungs: both lower lobes show thin fibrinous exudate on pleural surfaces; bronchopneumonic areas in both lungs, and right upper lobe œdematous. Heart: nothing abnormal. Liver: somewhat enlarged and showing toxic degenerative changes; gall-bladder normal. Spleen: slightly enlarged and softened. Pancreas: nothing abnormal. Kidneys: slightly toxic in appearance. Stomach and intestines: nothing abnormal. Brain not examined.

Case G. H.—Male, aged 19. Mouth: fauces, pharynx and larynx injected; epiglottis covered by membrane of purulent exudate. Trachea: intense inflammation with much purulent exudate. Lungs: no exudate or fluid in pleural spaces; both lungs deeply congested, areas of broncho-pneumonic consolidation in lower lobes; upper lobes show no consolidation, and less congested; no evidence of tuberculosis or past lung disease. Heart: nothing abnormal. Liver: bright red; gall-bladder healthy. Spleen: congested but not hard. Adrenals: congested; no hæmorrhages. Pancreas: congested; no hæmorrhages. Kidneys: both congested. Œsophagus: nothing abnormal. Stomach: hyperæmia of summits of the mucous ridges. Intestines: healthy. Brain not examined.

Of the 11 cases in this group 7 died, representing a mortality of 63%.

CONCLUSIONS

Although a number of casualty clearing stations might have been utilised, most of the cases were sent to St. Leonard's Hospital. This unequal distribution of casualties had two disadvantages. First, the medical and nursing staff were overburdened. It was not possible for 75 patients to be given the individual attention that could have been given to, say, 15, and no more than 15 need have been sent to this hospital if each casualty-clearing station in the area had received its proportion. Secondly, because the casualty beds were filled, early evacuation had to be resorted to, in some cases earlier than good judgment would allow.[1]

The effectiveness of the civilian respirators, both ordinary and duty, against gaseous ammonia was demonstrated by the first-aid personnel, who subsequently suffered no ill effects. This experience was shared by those people in the shelter who put on their gas-masks at the first suspicion of gas. A small proportion of the casualties had also worn their gas-masks, but these had felt much worse in them and taken them off. They admitted coughing and spluttering before donning their masks, which suggests that they had already inhaled gas in some quantity. In their pamphlet, "Air-Raid Precautions to be taken by Users of Ammonia" the Ministry of Home Security state:

"Tests have shown that any of the A.R.P. respirators give a certain degree of protection against anhydrous ammonia gas, although they are not designed for the purpose."

In this series, morphia in doses of gr. ¼–½ was given to all the shocked and restless patients. There is no evidence that this measure was in any way connected with the development of bronchopneumonia.

Three patients in the moderate group—cases in which, on admission, acute bronchitis was the essential respiratory lesion—developed the clinical picture of pulmonary œdema about six hours later. This condition, therefore, may appear as a delayed event, altering the prognosis appreciably.

SUMMARY

An account is given of 47 cases of ammonia-gas poisoning resulting from leakage of a condenser into an air-raid shelter.

The patients could be classified into mild, moderate and severe types. In the mild type the main feature was acute pharyngitis and tracheitis; in the moderate, acute bronchitis; and in the severe, pulmonary œdema.

Mild cases, of which there were 9, responded rapidly to treatment and were fit for discharge within a few hours.

Of the 27 in the moderate group, 3 patients developed signs and symptoms of pulmonary œdema within six hours of admission and died; 9 developed bronchopneumonia on the second and third days and of these 3 died; 15 patients recovered completely apart from hoarseness, and were discharged after about eight days. The fatality-rate for this group was 22%.

The severe group contained 11 patients, 7 of whom underwent a rapid deterioration in their general condition and died within two days. The other 4 patients made an uninterrupted recovery and were discharged from hospital after nine days. The fatality-rate for this group was 63%.

The civilian ordinary and duty respirators proved effective against ammonia gas.

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1. Such difficulties were foreseen by Slot, G. M. J. (*Lancet*, 1938, 2, 136) in his paper on casualties sustained in an explosion of ammonia gas in an ice-cream factory.

CALCIUM AND PHOSPHORUS STUDIES IN NORMAL PEOPLE

INCLUDING OLD AGE

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As a preliminary to a series of observations on conditions associated with derangement of the calcium and phosphorus metabolism * a study was made of normal healthy adults.

Serum calcium.—The normal serum calcium is given by Peters and Van Slyke (1931) as 9–11 mg. per 100 c.cm. in adults, and 10–11·5 mg. per 100 c.cm. in children. The circulating blood-cells are almost calcium free. In a given person the serum calcium remains remarkably constant; thus Watchorn and McCance (1932) have shown that it does not vary throughout the day, and Clark (1920), Denis and Minot (1920), Mason (1921), and Bauer and Ropes (1926) showed that neither deprivation of calcium nor calcium-rich diets have any effect on the concentration of that substance in the serum. Hjort (1925) was able to raise the serum calcium in dogs by giving calcium lactate in doses of 1·5 g. per kg. of body-weight in 5% solution—doses unlikely to be tolerated by human subjects.

Serum inorganic phosphorus.—Peters and Van Slyke (1931) have compiled a table from the reports of twenty-one authors in which they give the normal inorganic phosphorus as 2–5 mg. per 100 c.cm. for adults, and 4–7 mg. per 100 c.cm. for children. The methods employed were those of Bloor (1918), Bell and Doisy (1920), Briggs (1923) and Tisdall (1922).

Serum phosphatase.—The phosphatases are the enzymes which hydrolyse phosphate esters to liberate inorganic phosphate. Different techniques are employed in the estimation of phosphatase with the result that the normal values vary widely according to the particular method employed. The methods include those described by Kay (1930), Roberts (1930), Bodansky (1937), and King and Armstrong (1934).

Calcium and phosphorus balances.—A comparison of the intake and output of calcium and phosphorus is a recognised method of determining the calcium and phosphorus metabolism of the body. This method will recognise excessive calcium loss from the body long before osteoporosis of the skeleton begins. It has now been established from observations in many laboratories that if normal healthy people live on a low intake of calcium, such as 0·1 g. daily, then the body steadily loses calcium, chiefly in the fæces but also in the urine. Sherman (1937) has calculated that if a 70 kg. subject takes 0·45 g. of calcium daily there is equilibrium between output and intake. The figure of 0·45 g. of calcium daily has come to be regarded by certain workers as the calcium requirement of the body, but this is not the case. This figure represents the minimum of actual need, the optimum or ideal daily intake being about 1 g., with more during pregnancy and lactation.

FINDINGS IN THE INQUIRY

Method.—Throughout this series of investigations the serum calcium was estimated by Clark and Collip's (1925) modification of the method of Kramer and Tisdall (1921). The inorganic phosphorus was estimated by the method of Youngburg and Youngburg (1930), the serum being separated as quickly as possible from the cells and the estimation being carried out at once. Serum phosphatase was determined by King and Armstrong's method (1934). The methods employed in the balance studies have already been reported by Beaumont, Dodds, and Robertson (1940).

Observations were made on the serum calcium, inorganic phosphorus, and phosphatase of 60 normal healthy people between the ages of twenty and forty (table I). In table II the serum-calcium findings in these 60 adults are compared with those already published by Watchorn and McCance (1932), Kramer and Tisdall (1921, 1922), Halverson, Mohler, and Bergeim (1917), Salvesen and Linder (1923), and Bogert and Plass (1923), amounting to 50 observations.

Table III shows the results of analyses carried out on 15 people over sixty with an average age of 66·4 years. In a previous publication Beaumont, Dodds, and Robertson (1940) reported on calcium and phosphorus balances in 9 normal healthy subjects aged nineteen to fifty-four; a modified table has been produced here showing the ranges of calcium and phosphorus excretion in these subjects on a low calcium intake and their negative balances in mg. per kg. (table IV). In the last column, using the total calcium output as the index, I have calculated the daily calcium maintenance per 70 kg. of body-weight. The mean figure of 0·31 g. calcium daily is low. On a low calcium intake the output no doubt becomes depressed below the normal equilibrium point. I have tried to demonstrate this point in table V, in which the data here reported have been combined with 139 similar observations taken from papers by Bauer, Aub and Albright (1929), Von Wendt (1905), Sherman, Wheeler and Yates (1918), Sherman and Winters (1918), Sherman (1920), Rose (1920), Sherman, Gillett and Pope (1918), Sherman, Winters and Phillips (1919), Bogert and Kirkpatrick (1922), Hansman and Wilson (1934), and Beaumont, Dodds and Robertson (1940); the cases have been arranged into groups of increasing calcium intakes.

TABLE I—ANALYSES OF SERUM CALCIUM, INORGANIC PHOSPHORUS AND PHOSPHATASE IN 60 NORMAL MEN AND WOMEN BETWEEN THE AGES OF TWENTY AND FORTY

Case	Serum calcium	Serum inorg. phosphorus	Serum phosphatase (units)*	Case	Serum calcium	Serum inorg. phosphorus	Serum phosphatase (units)*
	(mg./100 c.cm.)				(mg./100 c.cm.)		
AA	10·8	3·5	5	BH	10·6	4·1	8·7
AB	10·4	3·5	7·3	BI	10·2	3·9	5
AC	10·7	3·6	6·2	BJ	10·2	3·1	6·2
AD	10·5	3·5	7·8	BK	10·3	3·5	9·2
AE	10·5	3·2	6	BL	10·4	3·7	6
AF	10·3	3·4	9·3	BM	10·7	3·7	8·3
AG	10·3	5·1	5·8	BN	10·2	3·6	6·8
AH	10·5	4	10·6	BO	10·3	4·1	5·5
AI	10·4	3·5	5·6	BP	10·5	3·8	6·1
AJ	11·1	3·9	7·8	BQ	10·4	4·8	8·4
AK	11	4·3	8·2	BR	10·1	3·6	7·4
AL	10·5	3·8	11	BS	10·8	3·1	8·2
AM	10·4	3·8	7·5	BT	10·9	3·9	4·4
AN	10·2	3·5	6·9	BU	10·7	3·7	7·7
AO	10·9	3·4	4·9	BV	10·2	3·8	6·4
AP	10·7	4	5·9	BW	10·1	3·7	3·7
AQ	10·6	3·8	13	BX	9·9	3·7	6·7
AR	10·5	4·5	9·2	BY	10·2	3·7	4·7
AS	10·2	4·1	5·9	BZ	10	4	13·5
AT	10·6	4	6·5	CA	10·1	4·2	8
AU	10·5	3·5	9·7	CB	10·3	3·8	5·2
AV	10·8	3·5	8·7	CC	10	3·8	6
AW	10·1	4·3	6·5	CD	10	3·7	7·3
AX	10·3	4·1	9·7	CE	10·2	4·1	4·7
AY	10·6	4·3	6·6	CF	10·1	3·8	3·5
AZ	10·4	4·7	5·8	CG	10	3·5	8·5
BA	10·3	4·3	6·5	CH	10·9	4	6
BB	10	3·7	11				
BC	10·2	4	7·6	Mean	10·393	3·831	7·195
BD	10·3	4·8	6·5	Range	9·9–11·1	3·1–4·8	3·5–13·5
BE	10·2	4·8	7				
BF	10·2	4	7·9	S. D.†	0·27	0·395	2·03
BG	10·3	3·3	5·7				

* Units of King and Armstrong. † S. D. = Standard deviation.

It seems to be widely believed, and has been stated by Harris (1941), that in middle age a large retention of calcium occurs. In table VI the calcium excretion of adults over forty (mean age 52·1 years) and under forty (mean age 29·5 years) is compared. The data have been obtained from the experiments of Bauer, Aub and Albright (1929), and Beaumont, Dodds and Robertson (1940). It will be seen that there is no difference between the calcium excretion of people over and under forty.

DISCUSSION

Serum calcium, inorganic phosphorus and phosphatase in adults and old age.—The range of serum calcium in normal healthy adults between twenty and forty was found to be 9·9–11·1, which is smaller than the accepted range. The figure is similar to the findings in a series collected from the literature, differing from this series

* These observations will be reported in three further papers in THE LANCET. The references for all four papers are given at the end of this one.

only in having a slightly higher mean and slightly smaller range.

Calculated according to Fisher's "P" test (Fisher 1938) the difference between the serum calcium and inorganic phosphorus of adults aged twenty to forty

TABLE II—COMPARISON OF THE FINDINGS SHOWN IN TABLE I WITH 50 OBSERVATIONS FROM THE LITERATURE

No. of cases	Mean serum calcium	Range of serum calcium	Standard deviation
	mg./100 c.cm.		
60	10·39	9·9–11·1	0·27
50	10·06	9·3–10·8	0·37

and of those over sixty is of no significance (for calcium, $P > 0·3$, and for inorganic phosphorus $P > 0·10$). The higher mean serum phosphatase in old adults may possibly be of significance ($P > 0·05$).

Calcium and phosphorus balances and calcium requirements.—In the 9 normal healthy adults on a low calcium intake of about 0·1 g. daily the output of calcium was found to be consistently greater than the intake (table IV). The daily excretion of calcium averaged 4·4 mg. per kg. of body-weight and the daily negative balance 2·5 mg. per kg., the corresponding figures for phosphorus being 10·4 mg. and 3·5 mg. With the lower calcium intakes of 0·038, 0·088, 0·116, 0·138, 0·185, 0·206, and 0·25 g. daily the calcium output (corrected to a body-weight of 70 kg.), although greater than the intake, was restricted. This depression below the point at which calcium equilibrium could actually be maintained was greatest with the lowest calcium intake. A constant calcium output was reached when the calcium intake rose to 0·28 g. daily (0·384 g. corrected to a body-weight of 70 kg.). In carrying out experiments designed to determine the calcium requirements of the body there seems to be a certain level of calcium intake below which the calcium output does not give a true indication of the amount required for calcium equilibrium. This critical level appears to be in the region of 0·38 g. daily for a body-weight of 70 kg. Approximate equilibrium between intake and output took place on a daily intake of 0·44–0·45 g. when corrected to a body-weight of 70 kg. The requirement for calcium equilibrium was therefore in the region of 0·45 g. calcium daily. It seems reasonable to expect that a minimum requirement would exceed the equilibrium requirement, but in the literature these terms are used synonymously.

A comprehensive survey of this subject has been made by Leitch (1937) based on a study of almost 400 balances with daily calcium intake varying from 0·08 to 0·742 g. Her series comprised 318 negative and 79 positive balances. Positive balances were obtained on as low an intake as 0·196 g. daily and negative balances on as high an intake as 0·65 g. daily. The numbers of negative and positive balances equalled one another with a daily intake of 0·50–0·55 g., and she concluded that the true daily maintenance requirement for calcium in her series was 0·55 g. This agrees well with Sherman's (1921) estimate and is similar to Owen's (1939) figure for older men.

It is abundantly clear from the experimental work of competent authorities that children require a surplus of calcium so that they may store or retain it at the rate of not less than 0·01 g. per kg. of body-weight daily. Failure to do this in childhood adversely affects growth, weight, maturity, powers of reproduction, onset of senescence, and the health of the next generation (Sherman and Campbell 1924, Sherman and MacLeod 1925, Sherman and Booher 1931, Campbell, Bessey and Sherman 1935). When adult life is reached the body does not store calcium above its daily optimum intake except during pregnancy and lactation, or when it is deficient in calcium. Much that is irrelevant has lately been written about the dangers of calcium overdosage. Overdosage cannot exist among the adult population because the healthy body rejects in the fæces whatever calcium it does not require. If children need to store calcium, what of adults nearing or over middle age? There is no evidence at all that middle-aged people behave differently from young adults in respect to their calcium metabolism. Large retention of calcium is a peculiarity of growing children only, and a necessary one.

Optimum calcium intake.—The ideal calcium requirement for health is much greater than the minimum calcium requirement, with which it must not be confused. At all times the body steadily loses calcium, but on a low calcium intake the loss is greater than the intake. If the calcium is gradually increased a stage is reached when the intake equals the output; this intake is known as the "minimum calcium requirement," but more exactly might be termed "the calcium equilibrium intake." It is doubtful if this amount of calcium is even a true equilibrium requirement. Observations on the intake and output of calcium are carried out in hospitals and clinics under ideal experimental conditions and with balanced diets. In the home, where balanced diets are not the rule, conditions exist which promote a greater excretion of calcium than in experimental subjects. A so-called minimum calcium requirement does not allow for any storage of that mineral

TABLE III—ANALYSES OF SERUM CALCIUM, INORGANIC PHOSPHORUS AND PHOSPHATASE IN 15 PEOPLE OVER THE AGE OF SIXTY

Case	Age (yr.)	Serum calcium	Serum inorg. phosphorus	Serum phosphatase (units)	Case	Age (yr.)	Serum calcium	Serum inorg. phosphorus	Serum phosphatase (units)
		mg./100c.cm.					mg./100c.cm.		
CJ	62	9·9	3·1	6·4	CV	65	10·5	4·4	12·5
CK	60	10	3·8	..	CW	70	10·1	3·5	8·3
CL	67	11	3·9	10·4	CX	78	10·5	3·7	7·8
CM	62	10·5	3·7	5·8					
CN	69	10·4	3·8	5·9	Mean	66·4	10·300	3·680	8·53
CO	60	10·4	3·7	10·2					
CP	70	10·1	3·6	7·1	Range	60–78	9·8–11·0	3·0–4·4	5·8–13·6
CQ	67	10·3	3·3	7					
CR	68	10·3	3·7	7·1					
CS	66	9·8	4	8·6					
CT	67	10·1	3	13·6	S. D.	..	0·332	0·358	2·37
CU	63	10·6	4	8·6					

TABLE IV—CALCIUM AND PHOSPHORUS BALANCES IN 9 NORMAL PEOPLE

Case	Age (yr.)	Weight (kg.)	No. of observations	Periods of three days										Daily calcium maintenance per 70 kg. body weight (g.)
				Calcium metabolism					Phosphorus metabolism					
				Intake (g.)	Output (g.)	Balance (g.)	Output in mg. per kg.	Balance in mg. per kg.	Intake (g.)	Output (g.)	Balance (g.)	Output in mg. per kg.	Balance in mg. per kg.	
CY	27	57·3	4	0·31	0·76	−0·45	13·3	− 7·85	1·08	2·2	−1·12	38·3	−19·5	0·31
CZ	30	58·7	6	0·32	0·79	−0·47	13·5	− 8	1·07	1·69	−0·62	28·8	−10·56	0·315
DA	54	60	4	0·34	0·60	−0·26	9·9	− 4·33	1·23	2·01	−0·78	33·6	−13	0·231
DB	50	42·7	3	0·27	0·77	−0·50	18·1	−11·7	1·02	1·49	−0·47	34·9	−11·02	0·422
DC	29	43·6	4	0·37	0·86	−0·49	19·3	−11·23	1·17	1·81	−0·64	41·5	−14·72	0·45
DD	19	51·8	1	0·38	0·58	−0·2	11·2	− 3·85	1·28	1·3	−0·02	25·1	− 0·39	0·261
DE	48	57·8	4	0·26	0·83	−0·57	14·3	− 9·87	1·09	1·73	−0·64	29·9	−10·08	0·333
DF	36	58·2	1	0·25	0·53	−0·28	9·1	− 4·81	1·12	1·55	−0·43	26·6	− 7·39	0·212
DG	32	71·7	6	0·33	0·80	−0·47	10·9	− 6·55	1·03	1·62	−0·59	23·4	− 8·22	0·254
Mean				0·34	0·75	−0·41	13·3	− 7·58	1·12	1·71	−0·59	31·3	−10·54	0·31
Mean per day				0·11	0·25	−0·14	4·4	− 2·53	0·37	0·57	−0·2	10·4	− 3·51	..

TABLE V—INFLUENCE OF A LOW CALCIUM INTAKE IN DEPRESSING OUTPUT BELOW NORMAL EQUILIBRIUM POINT

Intake per 3-day period (g.)	No. of cases	Balances		Over 3-day periods					Output per 70 kg. body-weight (g.)	Daily requirement for maintenance (g.)†
		Negative	Positive	Mean intake (g.)	Mean output (g.)	Mean balance (g.)	Output in mg. per kg.	Balance in mg. per kg.		
0·09–0·19	2	2	0	0·116	0·474	−0·358	7·98	−6·07	0·56	0·19
0·2–0·29	14	33	0	0·265	0·674	−0·409	11·94	−7·19	0·834	0·278
0·3–0·39	18	39	0	0·349	0·775	−0·426	13·44	−7·34	0·941	0·314
0·4–0·49	5	17	0	0·416	0·892	−0·476	13·53	−7·17	0·949	0·313
0·5–0·59	2	2	0	0·555	1·09	−0·535	17·66	−8·47	1·235	0·412
0·6–0·69	2	8	0	0·618	0·957	−0·339	14·77	−5·25	1·035	0·345
0·7–0·79	4	11	2	0·751	0·951	−0·200	17·84	−3·2	1·228	0·409
0·8–0·89	4	17	3	0·842	1·025	−0·183	20·09	−3·46	1·402	0·467
0·9–0·99	6	13	10	0·946	1·009	−0·063	18·93	−1·04	1·325	0·441
1–1·09*	..	..	..	..	..	..	..	..	..	..
1·1–1·19	6	3	12	1·165	1·155	+0·010	18·86	+0·48	1·322	0·44

* Insufficient data. † Per 70 kg. body-weight.

or any margin of safety, and thus represents a deficit for growing children and women during pregnancy and lactation. In round figures, if the minimum calcium requirement is taken as 0·45 g. daily then the optimum or ideal calcium requirement for a child is 1 g. daily (obtainable in 1 quart of milk; Sherman 1937), for an adult at least 0·7 g. daily (Sherman 1937), and for pregnant and lactating women 1·4–2 g. daily (Coons 1935, Toverud and Toverud 1931, League of Nations Health Organisation Technical Commission on Nutrition, 1938).

Dietary consumption of calcium.—The carefully compiled data of Sherman and Stiebeling (1936) in America, and of Orr (1937), Leitch (1937), and Crawford and Broadley (1938) in this country are in agreement that insufficient calcium is taken by large sections of the population. If this applies in peace-time, how much more must it apply during war. Most of our staple foods contain little or no calcium, so that it is possible to eat an abundantly nutritious yet calcium-poor diet. Analyses of war diets at the present time show that if milk and cheese are excluded the average calcium content is only 0·2 g. daily. Green vegetables are known to be useful carriers of calcium but their high calcium content does not necessarily mean a high calcium absorption. Thus spinach, which contains 0·078 g. % of calcium, supplies the body with scarcely any of that mineral because of its oxalic acid content (Finke and Sherman 1935). There is a danger of serious calcium insufficiency in the population unless adequate amounts of milk or cheese or both are taken, or calcium is added in some form. It was this danger of calcium deprivation which no doubt decided the Government to fortify with calcium a staple and cheap food such as bread. The consumption of bread is high, and by its enrichment with calcium it would be possible for all classes to obtain an optimum amount of calcium.

TABLE VI—COMPARISON OF THE CALCIUM METABOLISM OF ADULTS UNDER AND OVER FORTY

Under forty. Three-day periods				Over forty. Three-day periods			
Case	Age (yr.)	Output in mg./kg. body-weight	Balance in mg./kg. body-weight	Case	Age (yr.)	Output in mg./kg. body-weight	Balance in mg./kg. body-weight
DH	27	13·3	− 7·85	DT	54	9·9	− 4·33
DI	30	13·5	− 8	DU	50	18·1	−11·7
DJ	29	19·3	−11·23	DV	48	14·3	− 9·87
DK	19	11·2	− 3·85	DW	60	16	− 8·1
DL	36	9·1	− 4·81	DX	53	13	− 7·6
DM	32	10·9	− 6·55	DY	55	9	− 4
DN	19	10	− 5·6	DZ	53	7	− 3·2
DO	39	14	− 9·1	EA	50	12	− 7·6
DP	33	18	−11·9	EB	48	14	− 7·8
DQ	35	8	− 3·4	EC	50	12	− 6
DR	25	12	− 7·1	..	..	..	..
DS	30	8	− 5·2	..	..	..	..
Mean	29·5	12·3	− 7·05	Mean	52·1	12·5	− 7·02

It is important to distinguish between the intake of calcium which just produces equilibrium and that which allows for some retention. Retention of calcium is necessary to maintain health, and essential to children and to women during pregnancy and lactation.

If diets are to contain ideal amounts of calcium, adequate amounts of milk, cheese or both must be included. If this is not possible then additional calcium ought to be taken.

The calcium metabolism of middle age is no different from that of young adults.

I wish to thank Prof. E. C. Dodds for his criticisms, and the honorary staff of the Middlesex Hospital for permission to investigate their cases, quoted in the other papers in this series.

SUMMARY

In 60 normal healthy adults between the ages of twenty and forty years, the mean serum calcium was 10·4 mg., the inorganic phosphorus 3·8 mg. and the phosphatase 7·2 units (King and Armstrong), the ranges in that order being 9·9–11·1, 3·1–4·8, and 3·5–13·5.

In 15 healthy people aged sixty to seventy-eight, the serum calcium and inorganic phosphorus were not found to be significantly different from those of younger adults. The serum phosphatase was slightly raised in these older people, which may or may not be significant.

A study was made of 9 normal subjects (33 observations). On a calcium intake of 0·1 g. daily all subjects were in a negative balance; there was a total calcium excretion of 4·4 mg., and a negative calcium balance of 2·5 mg. per kg. of body-weight daily. On a phosphorus intake of 0·37 g. daily all subjects were in a negative balance; there was a total phosphorus excretion of 10·4 mg., and a negative phosphorus balance of 3·5 mg. per kg. of body-weight daily. The point at which equilibrium between intake and output of calcium took place was 0·45 g. daily for a 70 kg. subject. This intake of calcium is usually referred to as the minimum or maintenance requirement of the body.

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INGROWING TOENAIL

H. C. WARDLEWORTH NUTTALL
F.R.C.S., F.R.C.S.E., D.P.H.
SURGEON TO THE LIVERPOOL ROYAL INFIRMARY

THE ætiology of ingrowing toenail has often been misunderstood in the published accounts, and its various effects have been emphasised rather than the essential cause. Even the title is a misnomer, for there is no ingrowth of the nail. The essential ætiology is summed up in two words: tight shoes. If tight shoes are worn for long a linear ulcer develops from lateral pressure along one or both sides of the nail, usually of the big toe (fig. 1A, B and C). Dirt and excessive sweating lead to infection, and overgrowth and swelling of the nail fold follow from venous stasis and œdema (exuberant granulations); this is often accompanied by a fœtid discharge and much pain and disablement. Temporary relief may be gained by cutting away the edge of the nail but the symptoms promptly return as the

FIG. 1—Ingrowing toenail: (A) unilateral; (B) bilateral; (C) bilateral with extension.

nail grows again. Up to a certain stage the condition may be cured by palliative measures and by wearing properly fitting shoes, but in many cases these measures fail, largely because the patient persists in wearing tight shoes. The following operation gives a radical cure with a minimum of mutilation, and the results allow the patient to go on wearing the shoes which, it seems, are irrevocably decreed by fashion.

OPERATION

The most convenient position for the foot is flat on the table, and the operator stands at the end of the table. The skin of the forepart of the foot having been painted with iodine, local anæsthesia with 1% Procaine is obtained by subcuticular and deep subperiosteal injections over the area indicated in fig. 2. When the lateral injections have produced some degree of nerve block the needle is passed gradually under the nail, infiltrating its bed. The toe is next fixed by means of a tissue-forceps held by the assistant (fig. 3A). It is never wise to allow the toe to be fixed by hand, because however much care is taken the knife is apt to slip and even an expert surgeon may find himself operating on his assistant. Incisions follow the dotted lines in fig. 3A, clearing any granulation tissue or lateral extension of it. The flap must be dissected up almost as far as the joint line, and the incision along the sides of the nail and around the tip should be carried well down beyond the limits of the nail, and even beyond the tip of the phalanx. The two small digital arteries at the sides of the flap are best secured by torsion; ligatures tend to pull off. The flaps being drawn aside (fig. 3B), the nail is dissected from its bed from the free edge upwards, particular care being taken to excise the whole of the matrix at the upper end. Unless this is done completely tiny pieces of nail may grow again at the upper angles later; they cause no trouble but spoil the cosmetic effect. If the flaps have been properly undercut it will be found that the raw area can nearly always be completely covered; even if it cannot the small area left rapidly skins over. The sutures should be of thick silkworm gut, inserted some distance from the margins of the flaps and drawn tight with care, otherwise they will cut through. Four usually suffice (fig. 3C). A simple dressing of a piece of Vaseline gauze the size of a postage stamp, covered with dry gauze and wool, completes the operation. The patient is allowed to go home and returns a week later for the removal of the sutures. By this time he or she is usually walking fairly well and within two weeks of the operation is back at work. Occasionally healing is delayed for two or three weeks owing to the gross infection present. Drainage is free, however, and the end-result is as good in these cases as in those which heal at once.

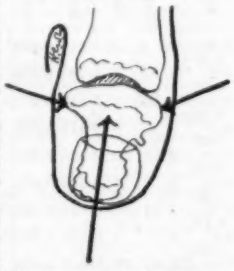

FIG. 2—Sites for injection of anæsthetic (arrows).

The operation is radical yet does not shorten the toe at all; and sensitive patients who wish to wear beach shoes are still able to appear with a full complement of painted nails by depicting one on the skin. The same operation can be used for cases of onychogryphosis and avoids the risk of infection of the bone which is always present when amputation is performed through the distal phalanx—a risk which has induced some writers to advocate removal of the distal phalanx altogether. Although a minor operation its technique is tricky, and it is more difficult to perform than amputation or disarticulation.

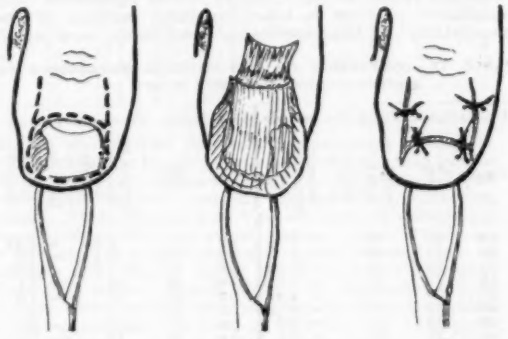

FIG. 3—Operation: (A) Incisions. (B) Elevation of flaps and excision of nail. (C) Flaps sutured.

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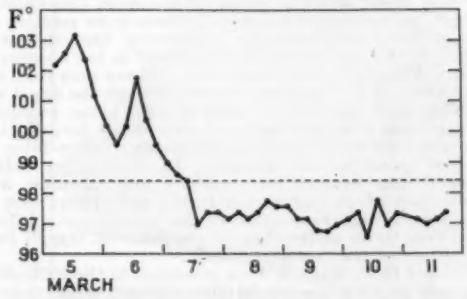
MINISTRY OF HEALTH.—The Minister has made the following acting appointments: Mr. J. C. Wrigley, deputy secretary of the ministry; Mr. E. G. Bearn, under-secretary in general charge of the preparatory and operational war activities of the ministry other than those associated with the Emergency Medical Service; Mr. T. Lindsay to be a principal assistant secretary; Mr. P. N. R. Butcher to be an assistant secretary; and Mr. Howell E. James to be chief general inspector.

TREATMENT OF BACILLARY DYSENTERY WITH M. & B. 693

G. J. BELL, M.B. Lond., D.P.M.
DEPUTY MEDICAL SUPERINTENDENT OF COLDEAST COLONY (TATCHBURY MOUNT), SOUTHAMPTON

AN epidemic of dysentery occurred recently at this colony which houses mental defectives of all grades. The number of patients affected was 16. Bacteriological investigations carried out by Dr. J. T. Duncan revealed that in this one epidemic there were two types of dysenteric infection, *Bacillus dysenteriæ* Flexner W being isolated from the stools of about two-thirds of the cases, and *B. dysenteriæ* Sonne from the others. In the patients infected with *B. dysenteriæ* Flexner the symptoms tended to be much more severe; they exhibited pyrexia up to 104° F., frequent passage of stools consisting of blood and mucus or pure blood, and severe



tenesmus. The Sonne group only had severe diarrhœa with much mucus and only an occasional trace of blood.

The opportunity was taken of treating the condition with M. & B. 693. This was given in doses of 0·5 g. four-hourly by mouth, and the average total amount received by each patient was 5 g. On this dosage and method of administration no symptoms of intolerance such as nausea or vomiting were shown by any of the patients. The results obtained were very satisfactory. In all cases treated the symptoms cleared up in 36–72 hours. The effect on the pyrexia was immediate and temperatures returned to normal within 24–48 hours. After the passing of blood and mucus had ceased there was a period of constipation varying from 2 to 4 days before normal stools appeared. In the treated cases there was little variation in the clinical picture. The following is an example.

An epileptic imbecile, aged 27. First symptoms of illness March 5, 1941. Passed frequent loose motions containing blood and mucus. Rise of temperature to 103·2° F. (see chart). Pulse-rate 72–100. Respirations 18–20. Complained of tenesmus. M. & B. 693 one tablet 4-hourly given. On the 6th passed only one loose motion containing blood and mucus. No complaint of tenesmus. Highest temp. 101·8° F. On the 7th much improved. Had one loose motion containing mucus only. Highest temp. 99° F. On the 8th no further symptoms. Received 10 g. M. & B. 693 altogether. *B. dysenteriæ* Flexner W present in stools.

The first 2 cases in this series did not receive treatment by M. & B. 693, and though they were obviously inadequate in number for purposes of comparison, the course of the disease in them did differ greatly from that in the treated cases. One made a good recovery after exhibiting typical dysenteric symptoms for nearly two weeks. The other (a low-grade epileptic imbecile) died after an illness lasting five days.

Of the 14 patients who received chemotherapy, specimens of bowel material were taken for examination before treatment was begun from the first 8. All gave positive results, 5 being found to be infected with *B. dysenteriæ* Flexner and the remainder with *B. dysenteriæ* Sonne. In the subsequent 6 cases treatment was instituted immediately symptoms appeared. Specimens for examination were taken at varying periods afterwards, but only in one instance when this was done within 24 hours was a positive result obtained, *B. dysenteriæ* Flexner being found. All patients in this group exhibited typical dysenteric symptoms similar to those shown by the earlier cases.

Dysentery bacilli were never found in any specimens taken for examination later than 36 hours after the beginning of treatment with M. & B. 693. Repeated examinations on all cases treated have so far been entirely negative. The specimens for examination were taken by means of rectal swabs. In 2 patients there was a recurrence of symptoms of mild degree 5 days and 14 days respectively after the cessation of symptoms, but it could not be confirmed bacteriologically that these were either relapses or reinfections. They were treated as before, with disappearance of symptoms within 24 hours.

CONCLUSIONS

Excellent clinical results were obtained by treating Flexner and Sonne bacillary dysentery with M. & B. 693. The results in the main agree with those obtained by Reitler and Marberg[1] at the Government Isolation Hospital, Haifa.

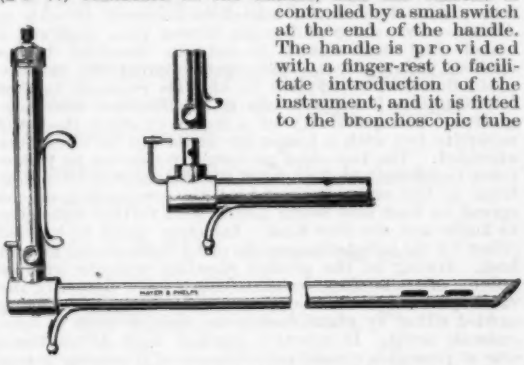
Repeated bacteriological examinations on bowel material from all patients treated have been negative for the presence of dysentery bacilli. Further investigations will be made periodically, and if the negative findings are maintained it is evident that the likelihood of patients infected becoming carriers is much reduced by this method of treatment.

I am indebted to Dr. J. T. Duncan, director of the Winchester laboratory of the Emergency Public Health Laboratory Service, who carried out all the bacteriological investigations, and to Dr. C. J. Thomas, principal medical adviser of the Hampshire Joint Mental Health Institutions Committee for permission to publish this article.

New Inventions

AN EMERGENCY BRONCHOSCOPE

THE bronchoscope illustrated was designed for bronchial aspiration and insufflation of oxygen in cases of emergency, when the facilities of a bronchoscopic clinic are not available. The battery for lighting is a dry cell (2·8 v.) contained in the handle, and the current is controlled by a small switch at the end of the handle. The handle is provided with a finger-rest to facilitate introduction of the instrument, and it is fitted to the bronchoscopic tube



by means of a screw, so that it can readily be removed for sterilisation. The bronchoscopic tube is sterilised by boiling, and the handle and light carrier by alcohol. The built-in tube is used for the insufflation of oxygen, and it can be connected to a cylinder by rubber tubing and the gas allowed to flow at the rate of 1 litre a minute. The model illustrated is 40 cm. long, and 10 mm. in diameter, but the tube can be made in varying lengths and calibre as desired. The apparatus is not meant to replace the accepted patterns used in routine practice.

The bronchoscope has been made for me by Messrs. Mayer and Phelps Ltd.

JOHN E. G. MCGIBBON, M.B. Lond., D.L.O.,
Squadron-Leader, R.A.F.

1. Reitler, R. and Marberg, K. *Brit. med. J.* 1941, **1**, 277.

Medical Societies

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE

AT the annual general meeting of this society on July 17, with Sir RICKARD CHRISTOPHERS, F.R.S., the president, in the chair, a paper on the present position of

Yellow Fever in Africa

was read by Dr. G. M. FINDLAY. Recent events, he said, had clearly demonstrated the specificity of the mouse-protection test for immunity to yellow fever in the blood of human beings, and had shown that the area which had been marked out by this test as the endemic zone in Africa did coincide closely with the actual distribution of yellow-fever cases. The endemic zone now extended from the west coast of Africa just to the north of Cape Verde, along the southern border of the Sahara to the Anglo-Egyptian Sudan; thence bending southwards it crossed the White Nile and extended as far east as, and quite possibly beyond, the Sudan-Abyssinian border; the eastern border of the area extended southwards through the western part of Uganda, thence diagonally across the Belgian Congo to the mouth of the Congo River. Any area in this zone was liable to be the site of an explosive outbreak of yellow fever. Three epidemiological types of yellow fever could be recognised in Africa—urban epidemicity, rural epidemicity and rural endemicity. The first type was carried on by *Aedes ægypti* and was apparently due to the importation of yellow fever from the country into the town: in the second type it was impossible to exclude *A. ægypti* as a vector since this mosquito was so widely distributed throughout rural Africa. The factors favouring rural endemicity were as yet unknown; it seemed unlikely that infection could be maintained solely by the man-mosquito cycle. Although 20% of wild monkeys in the endemic zone were known to contain immune bodies in their blood it was not considered likely that monkeys were sufficiently numerous to carry on infection in the absence of man. The possibility of other alternative hosts must therefore be considered. So far no wild animals other than one ostrich had been found to possess immune bodies in their blood, although in Colombia marsupials and certain other wild animals had been found to possess an acquired immunity. The sera of numerous domestic animals in Africa—cows, sheep and goats, horses, pigs, dogs and a camel—had been found to contain virucidal bodies against yellow fever. The specificity of the mouse-protection test as applied to animals required further investigation, but the results so far obtained were suggestive. The possibility of a reservoir other than the mosquito but with a longer life could not be altogether excluded. The two chief problems in relation to yellow fever in Africa were the more efficient control of yellow fever in the endemic zone and the prevention of the spread to East and South Africa with further extension to India and the Far East. Infection could be carried either by the infected mosquito or by the infected human host. Owing to the greater rapidity and the greater volume of traffic there was now much more chance of the virus spreading from the present endemic area and being carried either by plane, motor-car, ship or train to non-endemic areas. If infection reached East Africa there was at present a considerable chance of it passing across to Southern Arabia and India, since the dhow traffic was a replica of the shipping which during the 17th and 18th centuries carried yellow fever between Africa and America.

The methods of preventing the extension of yellow fever comprised more concentrated attacks on the breeding of mosquitoes, more efficient control of aerodromes and of people travelling by car from endemic to non-endemic zones. In immunisation was to be found a most efficient means of prevention, and it was time that regulations were promulgated to forbid the residence in any yellow-fever area of all non-Africans who had not been immunised against the disease. In certain selected areas mass immunisation of the whole population must be considered. At present the greatest difficulty in the efficient control of yellow fever lay in the multiplicity of authorities, each of whom was concerned solely with the condition of affairs within its own borders. Until there was greater correlation of administrative effort yellow fever would continue to be a menace to the health of Africa and of the whole tropical world.

Dr. HUGH SMITH (International Health Division of the Rockefeller Foundation), who had recently been in charge of yellow-fever investigations in Colombia, gave a brief account of the present position in South America. In the past three years there had been no instance of an outbreak transmitted by *A. ægypti*, although there had been many outbreaks of jungle yellow fever. In Colombia yellow fever recurred again and again at intervals of one or more years in the same isolated valleys, often within a short distance of a previous outbreak. Intensive studies had been made of all outbreaks and so far no other arthropod other than mosquitoes had been found infected. On eight occasions, however, virus had been isolated from wild hæmagogus mosquitoes. It was very difficult to account for the continuance of yellow fever in these areas, some of which were almost uninhabited. A high percentage of monkeys' bloods were positive for yellow fever thus strongly supporting the suggestion that yellow fever could maintain itself in the absence of man. Although yellow-fever virus did not pass from one generation of *A. ægypti* to another through the egg it was possible that this might happen with other mosquito vectors and this question was now being investigated. The absolute impossibility of diagnosing yellow fever on clinical grounds was stressed. In eradicating yellow fever it was essential to combine immunisation with eradication of *A. ægypti*, but it was not always easy to immunise a high proportion of the population. Efforts were now to be undertaken to eradicate *A. ægypti* from the whole of the Amazon Valley.

Colonel F. P. MACKIE drew attention to the difficulties imposed on air travellers by the differing regulations in force in different countries. Some countries accepted a certificate of non-exposure for 6 days; others insisted that if a person had been immunised against yellow fever he could not be admitted for 10 days; others extended the period to 21 or 23 days.—Colonel THOMAS MENZIES asked if combined vaccination against smallpox and yellow fever was recommended. It had been practised in certain French colonies.—Dr. H. S. STANNUS said he had never seen a case of blackwater in an African, although such cases had been recorded. He suggested that they might in reality have been cases of yellow fever.—Prof. T. F. HEWER drew attention to the difficulty in diagnosing cases of acute and subacute liver necrosis from yellow fever. Such cases, which were not uncommon, might in Africa be associated with black vomit.

Dr. FINDLAY, in reply, said that it was now generally agreed that people who had been inoculated against yellow fever were immune to the bite of an infected mosquito 10 days later. There was no scientific justification for imposing quarantine periods of 21 days or over. —Dr. HUGH SMITH concurred. It was impossible for anyone who had lived in an endemic zone to say that they had not been exposed to yellow fever and therefore certificates of "non-exposure" granted by any country in the endemic zone were farcical. So long as immune bodies could be shown to be present in the blood by the mouse-protection test there was no need for reimmunisation. If it was impossible to have a mouse-protection test carried out it was advisable to be reinoculated every two years, although there was considerable evidence to show that anyone who had ever had immune bodies in his blood was immune for a considerable number of years. Combined inoculation by scarification of vaccinia and yellow fever was not favoured. Dengue and yellow fever gave no cross immunity.

INDEX TO THE LANCET, VOL. I, 1941

The Index and title-page to Vol. I, 1941, which was completed with the issue of June 28, will be ready shortly. A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now.

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THE LANCET

LONDON: SATURDAY, JULY 26, 1941

MENTAL FITNESS OF U.S. RECRUITS

A RECENT advertisement called for men and women trained in occupational, vocational or educational psychology to enlist in the British Army for the work of selecting personnel. This betokens a somewhat tardy recognition of the assistance to be obtained from psychologists, and of the fact that the soldier's mental qualities are at least as important as his physical in estimating his efficiency, or placing him in the job where he will be most useful. Examination for mental fitness has hitherto had far less attention than the physical examination of recruits; it is more difficult to perform, more difficult to assess, more difficult to check, and therefore much more difficult to trust. The doubts and delays which have here hampered its reasonable application, except in special instances, are now showing themselves in the United States, where our tribulations of 1939 are being repeated. There the psychiatric problem has been fully recognised, and excellent instructions have been circulated for the guidance of physicians examining recruits[1]; but art is long (especially the psychiatric art) and time is fleeting, and 50 men a day have to be put through each neuropsychiatrist's sieve. An informative account of how this is being done comes from the Boston area.[2]

The physicians concerned have a lively sense of what the problem meant to the United States last time: 2% of the men admitted to the army in 1917–18 were found to be suffering from neuropsychiatric disabilities, hardly any of which were due to war service and most of which had begun at least five years before; a third of these men had some degree of mental deficiency, a sixth were neurotic, and another sixth were classified as drug addicts, alcoholics or "constitutional psychopathic inferiority"; and by 1927 almost half of all the cases receiving treatment for disorders attributable to war service were neuropsychiatric cases. Each such case has cost approximately 30,000 dollars to date. Nobody wants to incur such avoidable burdens this time, but there are more people to be examined under "Selective Service" than could be given the thorough psychiatric overhaul that might be desired. A compromise has been arrived at. Men are examined in the first instance by general practitioners (the local board); dubious cases can be referred to the specialists of the medical advisory boards (of which there is one to each ten local boards); all men approved as A1 at this stage are called up and examined by the medical induction boards, which are the final barrier before actual entrance into the army. On this board there are a medical director from the A.M.C., and (in the Boston area, which is presumably typical) five civilian neuropsychiatrists and a psychologist (non-medical), the other civilian specialists being a clinical pathologist, an oral surgeon, an otolaryngologist, an ophthalmologist, an orthopædic surgeon, a general surgeon, and three physicians. The allowance of neuropsychiatrists is therefore generous but not excessive. The number of men examined daily by the induction board has varied from 100 to 250. In a given month (February, 1941) a third of all rejections were on neuropsychiatric grounds, and they amounted to 5% of all candidates examined by the induction board. If the medical director had not refused to sanction some of the neuropsychiatrists' recommendations for rejection, the number of candidates rejected on these grounds would have been more than half as high again. The examination by the neuropsychiatrist took from five to ten minutes, the length of time spent on each case being restricted by the number of available psychiatrists and by the necessity to deliver the candidates to the reception centre on the day of induction. In justifying this expenditure of time to those who say it is too little, as well as those who say it is too much, four general principles are stated:

(1) Individual interests must for the time being yield to the collective interests of the nation.

(2) The army needs men sound in mind and body, it is not to be considered a corrective institution for psychopaths.

(3) There are 17 million eligible men from whom to choose an army of 2–4 million.

(4) The admission of undesirable candidates to the army not only decreases its efficiency but increases the burden on the nation through supporting these men by the army or by the veterans (pensions) bureau.

The first of these propositions will command universal assent; the second is flouted by those misguided patriots among examining doctors who can't see why "a bad hat should get away with it"; the third can arouse in our breasts only envy. As for pensions, the Americans have prudently set up a dam by providing[3] for further examination and rejection of recruits, if necessary, without providing governmental care or treatment for neuropsychiatric disabilities incurred before entrance into the army or within the first six months after entrance. On this score the difficulty is not to make a sensible enactment but to prevent its being set aside by clamour or political pressure.

It is instructive to read the proportions of men rejected for the U.S. Army on neuropsychiatric grounds by the induction board after the local board (which apparently too seldom invokes the aid of its advisory neuropsychiatrist) had passed them A1. The local board's neuropsychiatric rejections numbered 209 out of 4405 candidates: 16% of rejections were for mental deficiency, 5% for insanity, 54% for neuroses (including effort syndrome) and abnormal or psychopathic personality, 7% for drug addiction, stammering or enuresis, 4% for epilepsy, and the remaining 14% for neurological disorders. But the medical director on the induction board often (159 times out of 245 in the Boston area during February) quashed the neuropsychiatrist's rejection. He did this most often where mental deficiency, constitutional psychopathic inferiority, schizoid personality, psychoneuroses, post-traumatic syndromes and epilepsy were the diagnoses, and of 11 men recommended for rejection on account of effort syndrome he reversed the decision in every case. It seems that the army doctor was less particular than the civilian. Light is cast on this by the official plan for "prehabilitation"

1. See *Lancet*, May 17, 1941, p. 633.
2. *New Engl. J. Med.* 1941, **224**, 890.
3. United States Army Regulations, Nov. 20, 1939, para. 2 C (1).

of registrants, in which concern is shown about the high proportion of rejects.

"To date the number of deferments and rejections has been large, so great indeed that considerable concern is evident in Selective Service, in the Army, and in the country as a whole. It is estimated that less than 20% of the 16,500,000 registrants are being classed available for general military service. . . . Selective Service local boards at the present time are classing 20% of those physically examined in class IV-F, as being totally disqualified for military service, 12% in class I-B, as being fit for limited military service only, and 68% in class I-A, as being qualified for general military service. Of the 68% classed as being qualified for general military service and sent to the Army Induction Station, about 12% are being rejected because of physical, mental, moral, administrative and other reasons. . . . Criticism has been abundant and bitter and is on the increase." [4]

A plan is therefore put forward to make men aware of the physical standards required by the army, and to encourage them to seek medical advice in advance in order to make themselves fit to serve. Such men will then bring to the examining board a certificate of "prehabilitation" the obtaining of which "will tend to indicate character and the possession of desirable qualities—intelligence, forethought, initiative, fitness and a desire to serve—all of which must go into the making of a good soldier. . . . It should serve to diminish the number of rejections, with all the attendant humiliation and inconvenience involved." Evidently too high a standard of fitness for army service may have unwelcome effects on the civilian population. But it has to be remembered that many unsuitable men cannot be detected as such until they are in the training camp.

There is agreement among the American neuropsychiatrists who have lately written on the subject,[5] in the light of their experience on induction boards, that a great deal can be done by an experienced neuropsychiatrist in five to ten minutes of well-conducted interviewing, and that another ten minutes would not give much more that is practical and necessary for a decision. The testing of intelligence may be an essential part of the procedure. It could not be carried out by the physician limited to ten minutes for his whole examination, but must be regarded as an additional investigation. The Boston induction board has had the advice of a group of Harvard psychologists.[6] Group tests were looked on as impracticable "for both administrative and technical reasons." These objections are well known here, but it is surprising that they were regarded as decisive against the method. The tests used by the Boston psychologists were, however, less suitable to group testing on the whole than the progressive matrices test of RAVEN which has been much employed in this country. The subjects were referred by the psychiatrist as suspect of being below the mental age of 12 years (the critical level of capacity set by the U.S. Army recently, but questioned by the writers as too high) though it is well recognised that the basic question is not mental age but "is this man equal to the demands that will be made on him by the army?" Very brief examination by the psychologist disposed of the few candidates who were below the 10-year or above the 14-year level; those in between required more attention. Self-administered tests, with printed instructions (comparable to those which have also been widely used in the Army here), were found unsatisfactory in Boston because many of the subjects were unaccustomed to reading and were therefore handicapped in grasping what they had to do. The examiners say that they felt keenly the lack of non-verbal material that would be adequate and not time-consuming; probably our experience with non-verbal tests could be of use in this connexion. The Boston psychologists advise flexibility in the use of individual tests. "It is important," they say, "to have clinicians who are qualified to use their own judgment concerning the techniques that will enable them to give a reasonably accurate approximation of intellectual levels." Out of 5100 men passing through the induction station during 16 days, 199 were referred by the neuropsychiatrist for psychometric examination; 79 of these were given a rating of less than 12 years, 120 a rating of 12 or over. The regular psychological examination of recruits is deferred until they arrive at the reception station, where a fairly elaborate series of tests is applied.

4. *J. Amer. med. Ass.* 1941, **116**, 1777.
5. Aita, J. A. *Proc. Mayo Clin.* May, 1941, p. 294 and 307.
6. *New Engl. J. Med.* 1941, **224**, 898.

DRIED PLASMA AND SERUM

THE Ministry of Health's regional blood-transfusion services are now producing significant quantities of blood, plasma and serum, and are planned on a scale to provide these materials in excess of local needs; some of the regions have a surplus already. According to *Science* of June 13, our American colleagues think in terms of a hundred million quarts. What is to be done with these large volumes, little of which will be required for use immediately after collection? In this country it is likely that liquid plasma or serum will always be preferred since it is available for instant use, but for overseas or for reserve stores intended to keep more than a few months dried plasma or serum has great advantages; it is stable, transport weight and space are relatively small, and, so long as there is a proper supply of pyrogen-free distilled water at the receiving end, it can be readily reconstituted by simple solution in distilled water. Numerous methods for preparing dried plasma have been described; they all aim at distilling off the water without denaturing the proteins and in such a way that the product is easily soluble; sterility must be maintained throughout.

The most obvious method is simple in-vacuo distillation, allowing the water to be boiled off at a temperature well below 37° C. There is usually an arrangement which allows the liquid plasma to be run into the distillation chamber in a continuous stream or spray without stopping the process. An efficient system of this type was described by AYLWARD, MAINWARING and WILKINSON,[1] but although the product was satisfactory they found the method unsuitable for large-scale production. HARPER, ESSEX and OSTERBERG [2] used an essentially similar technique which they incorrectly call "spray distillation"; their account [3] of clinical experience with their dried product brings out one of the disadvantages—the residual water content may be as high as 8%, which diminishes its keeping qualities. A second

1. Aylward, F. X., Mainwaring, B. R. S. and Wilkinson, J. F. *Brit. med. J.* 1940, **2**, 583.
2. Harper, S. B., Essex, H. E. and Osterberg, A. E. *Proc. Mayo Clin.* 1940, **15**, 689.
3. Harper, S. B. Osterberg, et al. *J. Amer. med. Ass.* 1941, **116**, 1760.

principle, long used in bacteriology, is to freeze the plasma, and then, in a high vacuum, to distil off the water vapour into a condenser cooled to a much lower temperature with, say, solid CO_2. This has the advantage of producing a really dry plasma—perhaps less than 0·1% residual water—in the form of a light powder. Several special methods have been devised on this basis. FLOSDORF and MUDD's "lyophile" process [4] used solid CO_2 dissolved in methyl cellosolve as the cooling agent; their "cryochem" process [5] enabled larger quantities to be dealt with more efficiently by utilising a chemical absorber of water vapour (calcium sulphate). Both methods suffered from the disadvantage of being discontinuous; every so often the process had to be stopped to get rid of the condensed water, and then the apparatus had to be re-sterilised and the temperature gradient regenerated. To overcome this FLOSDORF and MUDD [6] introduced their "desivac" process, using a specially designed oil-pump; with this up to 100 litres can be dried at a time. One of the major difficulties of large-scale drying is the maintenance of sterility, and if the dried product is obtained in bulk contamination is liable to occur while it is being transferred from the apparatus to the storage containers. In the small-scale apparatus the drying is actually carried out in the final container which is sealed off when drying is complete. FOLSOM [7] makes use of a series of units each drying 250–500 c.cm. of plasma by a lyophile technique; he claims that it is efficient and relatively inexpensive to set up, a ten-unit set costing about £60; but the special containers needed can only be used once. GREAVES and ADAIR [8] overcame this objection by having a large drying chamber in which stacks of plugged sterile tubes of plasma or serum could be placed and drying actually took place in the plugged tubes. The principle of their apparatus was also high-vacuum condensation drying but they used a methyl-chloride refrigeration plant for the necessary cooling and combined it with a highly efficient system of temperature control to obtain the optimum conditions. This type of apparatus is relatively expensive to instal but once set up is claimed to be almost automatic. As much as 5 litres of serum could be dried at a time and modifications of this plant are said to be able to handle even larger quantities. Serum dried by this method has been found [9] on reconstitution to maintain its normal physicochemical properties, especially osmotic pressure, but it gives an opalescent solution thought to be due to some change, not apparently harmful, in the serum lipids. BROWN and MOLLISON [10] have reported satisfactory clinical results with serum dried in the Greaves-Adair apparatus, but they noted that 5 minutes' vigorous shaking with water at 40° C. was necessary to get the powder to dissolve at normal strength, and for concentrated solutions it was best to prepare the solution overnight.

The ideal has clearly not yet been reached, and yet another principle is being inquired into. This is "spray drying," as used on an industrial scale for the preparation of dried milk. Here warm air is used to blow the liquid through fine jets into a chamber; the water evaporates rapidly from the fine particles and is carried away on the air-stream, the dried powder falling to the bottom. This produces a fine easily soluble powder of the type required. It was probably not applied to plasma drying because of the relatively large-scale experiments needed and the difficulties of effective sterilisation, but research is proceeding along these lines in at least one centre and there is evidence that the difficulties can be overcome.

When the method has been chosen, is plasma or serum to be dried? Plasma has so far held the field because it is a by-product of the blood-banks and because of adverse clinical reports on the use of serum. The drying plants described will deal with the products of 100–500 pints of blood at a time, and in fact must be fed with these large amounts to work economically and efficiently. It is clear that only the large blood-banks can provide such quantities and that the blood will be specially drawn for producing serum or plasma. In this case it is far simpler to produce serum from the start—it is easier to prepare, many filtration difficulties are eliminated, and thorough drying is easier in the absence of citrate. Satisfactory clinical reports of the use of serum have come from this country [10] and America, [11] and the Canadian Government have chosen serum to send to this country and for their army medical services. DEGOWIN has rightly said that "the object of any service supplying blood and blood products should be to make them available as far forward as possible." It is safest in the present war to assume that the forward zone may be anywhere in the world. A properly dried serum can be sent anywhere with the minimum of trouble and stocks can be accumulated for emergencies without special expensive storage plant. It is to be hoped that agreement will soon be reached on the best method to be employed and that adequate quantities of dried serum will then be available for use anywhere.

4. Flosdorf, E. W. and Mudd, S. *J. Immunol.* 1935, **29**, 389.
5. *Ibid*, 1938, **34**, 469.
6. Flosdorf, Stokes, F. J. and Mudd, *J. Amer. med. Ass.* 1940, **115**, 1095.
7. Folsom, T. R. *War Med.* 1941, **1**, 342.
8. Greaves, R. I. N. and Adair, M. E. *J. Hyg., Camb.* 1939, **39**, 413.
9. Adair, G. S., Adair, M.E. and Greaves, *Ibid*, 1940, **40**, 548.
10. Brown, H. A. and Mollison, P. L. *Brit. med. J.* 1940, **2**, 821.
11. Levinson, S. O., Robovits, F. E. jun. and Nechtles, H. *J. Amer. med. Ass.* 1940, **115**, 1165.

COURSE IN INDUSTRIAL MEDICINE AT SHEFFIELD.—The first of a series of postgraduate courses in industrial medicine arranged by the faculty of medicine of Sheffield University was held on July 4–6, at the Royal Hospital and Royal Infirmary. Forty doctors were present when Dr. J. C. Bridge, senior medical inspector of factories, gave the opening lecture on the medical aspects of factory legislation. Dr. C. L. Sutherland, chief medical officer of the Silicosis and Asbestosis Medical Board, showed X-ray films of silicosis, asbestosis and byssinosis, and Dr. Henry Blyth, another officer of the board, silicotic lungs; Dr. A. I. G. McLaughlin, a medical inspector of factories, demonstrated the effects of the inhalation of non-siliceous dusts in industry; Mr. H. N. Boddy, Ph.D. (Safety in Mines Research Board) showed quartz dust and silica particles in dried lung tissue; Miss May Smith, D.Sc. (Industrial Health Research Board) lectured on fatigue, boredom and monotony in factory life; Dr. Rupert Hallam discussed occupational dermatitis; Mr. E. W. Murray, director of the Home Office Industrial Museum, lectured on ventilation and heating in factories; Dr. J. L. Grout demonstrated the X-ray appearances of the wrist bones of pneumatic tool-workers, and Dr. John Wilkie typical bone changes in fluorine osteosclerosis; and Mr. A. B. Nutt, showed apparatus used in industry to protect the eyes. During a visit to Messrs. Edgar Allen and Co. the class was shown the process of welding and the details of the manufacture of steel-castings, and the practical measures adopted to prevent the inhalation of silica dust given off during the fettling of the castings.

Annotations

PERIODIC DULLNESS

ANYONE who has lived with epileptics must realise that many of them suffer from periods of dullness, the characteristics of which are unusually slow response, failure of memory, especially for recent events, and a mild degree of confusion. Not uncommonly there is a change of emotional tone. The patient may be more irritable or more apathetic than usual. But the main change is often in the intellectual, rather than the emotional sphere, and the school-teacher or the nurse reports that the patient "seems half dazed." Careful observation shows that in many cases these periods are self-limited, lasting perhaps for hours perhaps for some days. They are not part of a general mental deterioration, they bear no relation to sedative drugs, and they are not pre- or post-fit phenomena. How are we to explain them? The most obvious thing is to class them as epileptic equivalents or variants and leave it at that. In some cases one is led to suspect that the patient is suffering from repeated very slight attacks of petit mal, with constant interference with the stream of consciousness, and this can sometimes be demonstrated by getting him to read out loud when the little breaks in consciousness become obvious. Short of these there may be serial attacks so slight as not to be clinically demonstrable. Whatever their explanation, these dull periods are a very serious manifestation of the complaint. Putnam and Merritt[1] give details of 10 cases in which periodic dullness was a prominent symptom. They are able to correlate it with abnormal electric rhythm in the cortex, the abnormality usually consisting of slow square-topped waves of the type associated with psychomotor attacks rather than with the wave and spike formation of petit mal attacks or absences. They further show that it can be removed clinically and on the electroencephalogram by treatment with sodium diphenylhydantoinate (Epanutin). The evidence for the periodicity and self-limitation of the dullness in some of the cases they cite seems incomplete, and its disappearance at the same time as the removal of major and other attacks by drug treatment suggests that the dullness might be a direct outcome of the attacks. Nevertheless, their clinical results are sufficiently encouraging to lead them to consider whether periods of dullness and slight mental confusion in subjects not liable to fits might be expressions of similar alterations in cortical rhythm and could be removed by similar means.

CERTIFICATION OF INJURIES IN WAR-TIME

WHEN war broke out local emergency committees had ready for distribution to all medical practitioners a memorandum from the Ministry of Health explaining how to issue certificates for the payment of "injury allowances." Doctors agreed to furnish these certificates without fee and in a memo just issued (Ministry of Health, No. 248) revising these instructions the Minister of Pensions thanks them for their generous coöperation. Under the Personal Injuries (Emergency Provisions) Act 1939 allowances are paid to those rendered incapable of work in two distinct categories—the allowance to be replaced by a pension where disablement is prolonged.

War injury is defined as physical injuries caused by the discharge of any missile (including liquids and gas), the use of any weapon, explosive or other noxious thing, the doing of any other injurious act either by the enemy or in combating the enemy or in repelling an imagined attack by the enemy, or by the impact on any person or property of any enemy or allied aircraft or anything dropped from it.

War Service injury is defined as any physical injury to a volunteer arising out of and in the course of the performance of his duties as a member of the civil defence organisation.

1. Putnam, T. J. and Merritt, H. H. *Arch. Neur. Psychiat.* May, 1941, p. 797.

Thus both war injury and war-service injury mean physical injuries only. Injury to the brain or to the eyesight as a direct result of concussion, cases of shock originating from direct exposure to bomb explosion or blast in which the incapacity for work starts from the time of the incident, collapse from heart failure as a direct result of an air-attack and similar casualties may be accepted as physical injuries. The definition does not cover neurasthenia or similar sickness in which the symptoms are induced merely by apprehension and fears of enemy activity and a certificate should not be issued to these patients; if they are insured they are entitled to health-insurance benefits. Insured persons incapable of work because of war or war-service injuries are disentitled to sickness benefit for incapacity arising from that injury, but after 26 weeks modified sickness or disablement benefit may be paid, while people who are injured while incapable of work because of some other disability do not receive a war or war-service injury certificate until the other injury ceases to be the cause of incapacity. Injury allowances are administered by the area officer of the assistance board, acting as agent of the Ministry of Pensions.

CALCIFIED DEPOSITS ROUND THE SHOULDER

LAST year R. L. Patterson and P. D. Wilson[1] discussed the value of irrigation of the subacromial bursa in the treatment of the painful shoulder; while dramatic relief could often be obtained in attacks of acute bursitis they noted that the effects on areas of calcifying tendinitis were not equally satisfactory. A great part of the difficulty in estimating the results of treatment of calcified lesions in this situation lies in the lack of knowledge of the natural history of these deposits, and for this reason Bosworth[2] has studied the shoulders of 5061 presumably normal employees of the Metropolitan Life Insurance Company of New York over 3 years. Radiography was always preceded by careful screening, since only by inspection during full rotation of the humeral head can every deposit be picked up and its fullest extent visualised. Some degree of calcification was present in 2·7% of the total and was half as common again in men as in women; the age-incidence rose steadily up to 50, when it fell off abruptly. Half the cases were bilateral and the right side was affected twice as often as the left in the remainder. No relation could be demonstrated between the deposits and focal sepsis, rheumatism or other disease, and the blood-calcium was invariably within normal limits. Occupational incidence, however, was striking; in all age-groups typists were affected roughly twice as often as clerks, a finding that supports Codman's[3] views on the rôle of continued abduction in the ætiology of supraspinatus rupture and tendinous calcification. Trauma did not seem to be causative, though it occasionally precipitated the onset of an acute bursitis. As regards site, the deposits were found in the supraspinatus, infraspinatus and teres minor in that order of frequency and only occasionally in the subscapularis. Repeated screening showed that deposits could accumulate gradually and disappear over a period of years without ever giving rise to symptoms. In fact, only 70% of the radiographically positive cases developed symptoms during observation; but it was noticed that the large plaques, 1·5 cm. or more in diameter, invariably caused pain or acute bursitis at some stage. Symptoms ranged from a mild occasional twinge to a disabling attack of acute bursitis, and the commonest complaint was of nocturnal discomfort and limitation of abduction. The difficulty in assessing the value of a particular line of treatment is associated with the fact that 30% of cases are asymptomatic, that all but the largest deposits

1. See *Lancet*, 1941, 1, 82.
2. Bosworth, B. M. *J. Amer. med. Ass.* 1941, 116, 2477.
3. Codman, E. A. The Shoulder, Boston, 1934.

may regress and disappear, and that symptoms tend to undergo spontaneous remission. Certain general conclusions may nevertheless be drawn. Operative excision of a deposit will always promptly relieve the acute bursitis to which it has given rise, and symptoms do not tend to recur; operation may be performed under local anæsthesia, requires only a few days' hospitalisation, and should be followed by return to work with full movement in 3 weeks. Irrigation, while it relieves an acute bursitis and clears the bursa of suspended calcareous debris, does not necessarily affect the initial tendinous focus which may recur; nor should it be undertaken in outpatients. Diathermy and short-wave therapy are only to be regarded as ancillary and post-operative forms of treatment, and immobilisation alone is pernicious because of adhesion formation. If special surveys of this type become popular the management of the case with radiographic findings but no symptoms will assume some importance. Bosworth advocates routine excision of large deposits, since they inevitably cause trouble at some time; the smaller ones should be observed occasionally. What is clear is that calcification in the tendinous cuff of the shoulder-joint capsule is a continuous and often self-limiting process for which it can no longer be asserted that operation is necessary on the results of a single observation.

A LONG SYMBIOSIS

THE Reading Pathological Society met for the first time on July 13, 1841, at the then two-year-old Royal Berkshire Hospital, and today the two centenarians are still cronies. The society has always met at the hospital, and the hospital at once gave it free use of the library on condition that all the books "whether already purchased or added in the future" should be the property of the hospital. The enterprising and lively society soon realised how important a library was for the distribution of knowledge, especially perhaps to those working in the comparative isolation of country practice, and by 1883 when a new library was opened in the west wing of the hospital a valuable reference collection had been amassed largely through the society's efforts. At the commemorative meeting of the society on July 17, in recognition of this, the Rev. Harvey Thursby, chairman of the hospital board, formally presented the books to Dr. George Halpin, president of the society, as a centenary gift. Dr. G. O. Lambert, who gave the centenary oration, chose as his subject "The Reading Pathological Society—One Hundred Years in Retrospect" and illustrated his address with pictures of past members, the society's crest, and the president's badge, an effigy of Imhotep designed by the late Dr. Jamieson Hurry. Speaking of the function of medical societies, Raymond Crawfurd once said that men's minds are massaged by rubbing against each other. The Reading Pathological Society has a record of a hundred years of such beneficial friction behind it and we have every confidence that it will continue to rub along.

GLYCOGEN DISEASE OF THE LIVER

SOME confusion still exists over the biochemical and clinical findings in glycogen disease of the liver, partly owing to conflicting data in the numerous cases reported, and partly to a failure to differentiate clearly between the various diseases which may give rise to excessive glycogen storage in the liver. Ellis and Payne[1] consider the following biochemical findings to be typical: a low fasting blood-sugar which fails to rise after the injection of adrenaline; a delayed fall in blood-sugar after the ingestion of glucose; and a rise in blood-sugar which sometimes occurs in the half hour after the ingestion of lævulose. The glycogen and cholesterol of the blood are raised and acetonuria is found. Mason and Andersen[2] tried to classify the reported cases under two divisions—cases in which the main deposit of glycogen is in the liver, and those in which it is mainly in muscle, including that of the heart. They have singled out subgroups under these headings according to the degree of hepatomegaly and the presence or absence of fructosuria or galactosuria, cases of abnormal insulin regulation including diabetes mellitus, and cases in which there is an apparent inability to transform glycogen to dextrose in the liver. They suggest that glycogen storage disease of the liver should include the cases in which the chief deposit of glycogen is in the liver, and that "von Gierke's disease" should be employed only for cases where excess deposit of glycogen in the liver results from inability of the liver to break down glycogen. The cause of excessive storage of glycogen has excited considerable controversy. von Gierke himself considered that the liver glycogen was persistent fœtal glycogen which is comparatively stable. Endocrine theories incriminating the adrenals, pituitary or pancreas have been put forward. Hyperinsulinism certainly would account for the low fasting blood-sugar or the occasional attacks of hypoglycæmia, but it does not explain the acetonuria. Ellis and Payne and others have said that the high dextrose-tolerance tests suggest an abnormally slow rate in the storage of sugar as glycogen, and that the enzyme responsible for glycogen storage and breakdown is reversible. In these circumstances it would be difficult to explain how the glycogen was originally stored in the liver in such large quantities. Mason and Andersen have reported enzyme and chemical studies in an affected child from birth until death at the age of 2 months. They think their case was due to a defect in the reversible enzyme system in the liver, whereby the intermediate stages in the conversion of glycogen to dextroses were interrupted. They point out, moreover, that as carbohydrate metabolism is associated with a complex system of enzymes, the concept of a single enzyme "glycogenase" should be discarded. Their theories and experimental evidence have gone far towards elucidating the cause of the disease and give a more satisfactory explanation of the divergent biochemical findings than any other.

1. Ellis, R. W. B. and Payne, W. W. *Quart. J. Med.* 1936, 5, 31.
2. Mason, M. D. and Andersen, D. H. *Amer. J. Dis. Child.* April, 1941, p. 795.

TOXICITY OF SULPHONAMIDES

IN man the most common toxic effects of the sulphonamide drugs are on the blood, so that it seems more reasonable to measure their toxicity by their destructive action on the blood of mice than by determining the lethal dose. Richardson[1] has used such a method in testing the toxicity of four of these drugs and has shown a relationship between their chemical structure and hæmolytic activity. For each drug he incorporated graded amounts in the diet of 50–60 mice for 14 days and then studied the changes in their hæmoglobin and reticulocytes, and in the formation of abnormal blood-pigment. He also investigated the relation of the blood concentration of the drugs to intake and the distribution between plasma and erythrocytes. The minimum intakes of the four drugs required to produce hæmolysis expressed in g. per kg. per day, were: sulphanilamide 0·12, sulphapyridine 0·31, sulphathiazole 0·52 and sulphanilylguanidine 1·3, so that, for the same dosage, sulphanilamide was twice as injurious to the blood as sulphapyridine, four times as injurious as sulphathiazole and nearly eleven times as injurious as sulphanilyl-guanidine, which is poorly absorbed from the gut. There were striking differences in the distribution of the drug between plasma and cells. With sulphanilamide and sulphanilyl-guanidine most of the drug was in the cells, with sulphapyridine the distribution was more nearly equal, whereas with sulphathiazole the greater part was in the plasma. It was found that the minimum concentrations in the erythrocytes required to produce hæmolysis were,

1. Richardson, A. P. *J. Pharmacol.* May, 1941, p. 99.

when expressed in molecular units: sulphanilamide 11·3, sulphapyridine 11·9, sulphathiazole 10·6 and sulphanilyl-guanidine 10 micromols per 100 c.cm. erythrocytes. This uniformity suggests that the chemical grouping responsible for hæmolysis is the sulphonamide nucleus common to all four drugs, and that the various substitutions which profoundly alter therapeutic action have no effect on hæmolysis except so far as they alter the absorption or distribution of the compound. Differences in absorption and distribution may account for Richardson's finding that cyanosis was produced by sulphanilamide and sulphapyridine but not by sulphathiazole or sulphanilyl-guanidine. As the dosage of the latter two drugs was increased the proportion absorbed steadily diminished, so that a concentration in the erythrocytes sufficient to produce cyanosis was probably not reached in the limits of Richardson's experiments. His work, by drawing attention to the importance of molecular concentration in the red cells in determining the occurrence of hæmolysis, may point the way to the development of more effective compounds with less toxicity.

ABSENTEEISM IN WAR FACTORIES

WHY do some workers in war-factories stay away from work more than appears, at first sight, to be reasonable? The employers blame the men and the men blame the employers, and whatever may be the root causes of the trouble (if the word is not a little too comprehensive) it is most important that they should be sought and dissolved in a spirit of harmony. Team work is essential for most enterprises and especially for our present one of seeing that the doctrines and practices of the *Herrenvolk* shall not prevail in the world. Important visitors to two shell-filling factories have reported[1] that absenteeism is causing considerable dislocation of work. From a somewhat limited survey they have arrived at conclusions about absenteeism which appear to be sound and of general application. In the winter absenteeism varied between 15 and 20%; on the adoption of a three-shift instead of a two-shift system the figure fell immediately to 10%, rising again later to 12%. Women stayed away more often than men and there were always more absentees from the morning shift than from the other two. It was not surprising that Saturday afternoon and Sunday morning were the periods more in favour with the workers for taking a rest. In one week 26% of the women and 16·8% of the men played truant on Saturday afternoon; 22% and 18·4% did the same on Sunday morning.

The main causes of absenteeism appear to be these: transport difficulties; lack of adequate living accommodation near the factories; imperfect working conditions, especially the arrangements for getting food in canteens; and, last but not least, the 7-day working week. It is pointed out that most workers have to travel three or four miles to work, some of them as much as thirty. Without adequate provision of special trains and omnibuses it is idle to expect workers to be punctual or regular. The select committee regards it as a primary duty of the Ministry of Supply to see that transport facilities are adequate. Hostels should be built near the factories and accommodation provided for the workers at a reasonable cost. Continual watch should be kept on canteen arrangements and prices, and the supply of food to factories given reasonable priority. The committee finds that the Sunday atmosphere is not conducive to maximal effort. "No man," the report says, "can work seven days a week for any length of time and maintain his output, and this is even more true of women." The abolition of Sunday work, except for maintenance or for real emergency, is therefore recommended. In the committee's opinion the men appointed to manage the Royal Ordnance factories should have first-class ability but it appears that the Ministry of Supply is handicapped in its choice by the Treasury scale of salaries. A review of this scale is thought to be an urgent matter. The clear implication is that the character and personality of the management play an important part in determining whether or not the workers stay away from the factories for seemingly trivial causes, and indeed it is well known that the presence of a bullying foreman or manager has the effect of raising appreciably the rate of sickness absenteeism. Where workpeople are made to feel that they are co-partners in an important and urgent task the rate of absenteeism falls; it may even be difficult to get them to take holidays—an attitude into which the question of wages also enters. The number of places is diminishing in which the workmen are treated as if made of inferior clay and even in those that remain there are signs of a change of heart.

1. Seventeenth Report of the Select Committee on National Expenditure. London. H.M. Stationery Office. 1*d*.

LUPUS IN EDINBURGH

FORTUNATELY lupus vulgaris is no longer the common disease it was. Whether war conditions will produce an influx of new cases remains to be seen, but no increase has yet been noted. Its treatment is always tedious, so that cases tend to collect in the clinics which take a special interest in them. One such clinic is at the Edinburgh Royal Infirmary, where for a number of years Dr. Robert Aitkin has spent a great deal of his time in treating this affliction. He has lately summarised[1] the cases dealt with in his department. Two important facts stand out from his analysis—that 25% of the cases began during school life, and that 50% followed cervical adenitis. A big factor in the fall in incidence must be that glands in the neck are now for the most part treated by general light baths rather than surgically. But a purer milk-supply, slum clearance, and regular medical inspection of school-children have also helped. The high rate of cures (735 cases out of 957 in the last ten years) at the Royal Infirmary is undoubtedly due to the employment of the Lomholt lamp for local treatment. Many of the patients have now been free for as long as six years. Dr. Aitken urges the need for long-continued treatment and careful follow-up, and above all a continuity in nursing. His figures show that the optimistic outlook which is a feature of his clinic is fully justified.

Mr. WILLIAM GISSANE has been appointed clinical director of the Birmingham accident hospital and rehabilitation centre and will take up his duties early in September. Mr. Gissane, a surgeon specialist to the L.C.C., is at present in charge of the accident unit at St. James Hospital and of the fracture unit at Lewisham Hospital. The new accident hospital has found a home in the building of the Queen's Hospital, which closed its doors as a general hospital at the end of March.

1. *J. phys. Med.* 1941, **4**, 68.

FEATHERING THE STORK'S NEST.—The Ministry of Health (circular 2437) has arranged with the Board of Trade that after Aug. 1 expectant mothers will be given 50 coupons to buy materials to make clothes for their baby before it is born. The coupons will be distributed through the local welfare authorities and will be issued on the production of a certificate from the doctor or the midwife booked to attend the birth. If the mother is attending an ante-natal clinic the certificate should be signed by the medical officer of the clinic. The Ministry of Health urges that the coupons should be supplied as soon as the likelihood of birth can safely be assumed and suggests that this will usually be in the sixth month of pregnancy. Where a diagnosis of twins is made and confirmed the mother is entitled to 100 coupons. The doctor's certificate should state the name and address of the expectant mother; her national registration number; and the approximate date on which the confinement is expected.

Special Articles

THE CASE FOR A NATIONAL HOSPITALS BOARD

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MOST writers on hospital policy seem to agree that some form of regionalisation is desirable. The latest effort in this direction, the Nuffield Provincial Hospitals Trust, which is an attempt to implement and extend the recommendations of the Sankey Commission, is at present only at the stage of discussing boundaries and spheres of influence, and it is by no means certain that it will have the necessary prestige and persuasive power to break down the barriers which have hitherto prevented the full success of every coördinating scheme. Under the Nuffield scheme the voluntary and municipal hospitals, within both the divisions and the regions, are expected to achieve a large measure of coördination and the Central Hospitals Council is to be in charge of major lines of policy and to be a supreme directing council. At the outset it has been decided to invite the provincial members of the British Hospitals Association to be a nucleus of this body which will in fact develop into a Provincial Hospitals Board. This leaves unsolved two large questions which are really the crux of the matter:

1. Is there still a need for the two types of hospital to exist side by side; if not, is a merger of the two systems desirable and practicable?
2. What is the best type of central controlling body for the hospitals?

A UNIFIED HOSPITAL SYSTEM

The efforts at coördination between the voluntary and municipal hospitals have had only a small measure of success, mainly because of the essential independence of the units in the voluntary system and the absence of any real urge to combine. The P.E.P. report says, "The complete merging of the two systems, if it comes, will evidently not be completed for a very considerable time"; but public opinion has moved far since 1937 when this report was published. The voluntary hospitals are coming to depend to an increasing degree on contributory schemes and are pressing for further help from the rates—that is, they are becoming less dependent on voluntary subscriptions and are getting paid for a larger proportion of their work. Under the Nuffield Trust plan the local authorities will no doubt be expected to pay for much of the cost of regionalisation both by a bed levy and increased donations. The removal of the stigma of pauperism from the local-authority hospitals which the 1929 act brought about and their consequent increased use by a widening section of the community have helped to narrow the gap between the two systems. In large centres the differences between the type of person admitted to the voluntary and municipal hospitals are based not on income level but on the type of disease from which the patient is suffering, and these differences are not sufficient to justify the maintenance of two systems. It is often maintained that medical work, especially medical research and teaching, flourish best in the atmosphere of freedom found in the voluntary hospitals, but it has yet to be proved that they cannot flourish equally well under a unified hospital system.

After the war some increase of hospital accommodation over the pre-war level will be necessary and extensive rebuilding will have to be carried out. The voluntary hospitals, who find difficulty in keeping up with their present commitments, can hardly be expected to provide for expansion; on the other hand, if the programme is carried out by the municipal hospitals they will gradually overtake the voluntary hospitals and become the more important of the two systems. It may be that the Nuffield scheme, which would encourage the hospitals to plan for the division or region as a whole and is prepared to subsidise within the limits of its small income any hospital, voluntary or municipal, which fits into this plan, will succeed, but to quote the P.E.P. report again, "The ultimate control will rest in the hands of those who use these services, of those who pay for them and of those who provide them." If the local authorities demand a degree of representation proportional to their financial support, as seems likely, the coördinated service will become more and more municipalised. In any case a merger cannot result in a completely voluntary service.

The Minister of Health will presumably watch the development of the Nuffield scheme and if it succeeds might encourage regional planning by financial support. He might do this by making a direct grant for hospital services, by taking hospital provision into consideration when making the block grant, or by defraying a proportion of the cost of any divisional or regional scheme of which he approved. This would have the advantage of fostering regionalisation with a small measure of central control through finance while giving much local autonomy and leaving medical practice but little disturbed. Any local schemes are bound to need financial aid, either from rates or from the Exchequer. Rate aid would tend to bring into the scheme narrow municipal considerations and would also have the great disadvantage of levying the heaviest burden on the areas least able to bear it. In this connexion it is noteworthy that the richest counties have the best hospitals. If the grants given were placed in the hands of the divisional and regional councils along with other monies from voluntary sources, contributory schemes, local authorities and so on, the councils would have the necessary powers to carry out their work.

Under such a scheme, since the various hospitals would be distinguished chiefly by the nature of their work, and since the staffs would be paid and not honorary and each hospital would have an outpatient department, the reasons for maintaining any superficial distinction between systems would disappear and it should be possible to merge the two. There would then be no need to abolish private consultant practice entirely, but the visiting staffs, being salaried, would have their independence curtailed to the extent that they would be obliged to carry out their duties in a satisfactory manner. The increasing subsidies and the narrowing of the gap between the two systems would necessarily lead to a fall in voluntary subscriptions, especially if the local authorities claimed a large share in the management of the hospitals they supported, so that before long the voluntary system might cease to exist.

THE CENTRAL CONTROLLING BODY

Since opinion is united in advising a regional development, the next big question is who is to control the regions. It has been suggested that no council run on voluntary lines can do this, especially since the general history of joint boards has been unsatisfactory, nor for the reasons already mentioned and because of the unsuitability of municipal boundaries for this purpose should control be given to the municipalities. Control is likely, therefore, to pass into the hands of either the Ministry of Health, as full nationalisation, or of some ad hoc body. Mr. Somerville Hastings, who takes a Labour view in politics, puts forward the idea of his party that nothing short of complete nationalisation of all the medical services will do. It is also noteworthy that the Association of Trade Union Approved Societies at their meeting in 1939 passed a resolution recommending nationalisation of the hospitals. Nationalisation would have these advantages:

1. Planned regionalisation could be made efficient. A detailed survey could be carried out and the recommendations arising therefrom implemented, since difficulties due to local-government boundaries could be overcome.
2. Finance would be simplified.
3. The hospitals would be subject to Government inspection and report, and since all the data would be kept in comparable form it would be possible to compare the work and efficiency of the separate institutions.
4. Since the staff would be full-time employees, private consultations would presumably take place at the hospitals, so there would be an end to the waste of money in maintaining consulting-rooms in what are often, sentiment apart, unsuitable premises. Another result of nationalisation would be that non-medical and nursing staffs would have more equitable conditions of service.
5. Medical education, both undergraduate and postgraduate, could be planned purely on a basis of making the maximum use of the clinical material available, leaving the details to special committees in each area. Nurses, whose organisations for joint action are notoriously poorly developed, would have

regional and divisional representatives to watch their interests, and this would lead to a levelling of some of the glaring inequalities in the conditions of service.

Against these undoubted benefits must be set some probable disadvantages.

1. The voluntary hospital system has a long and honourable history. Its units are independent and proud of it, and while this has led to rivalry and overlapping it has also kept the more progressive units in close touch with the advances in medical knowledge, since their prestige largely depends on their ability to convince the public of their prowess. This is probably less true of the non-teaching hospitals, and still less true of the very small units. The system of choosing the honorary staffs and the competitive element in private practice has helped to maintain keenness, since success in private consultant practice is based on the reputation gained in the hospital wards and outpatient departments. Some oppose nationalisation because they believe the competition of private practice to be eminently desirable. Others fear that nationalisation will bring with it the dead hand of excessive central control, with a rigidity of outlook and the loss of the conditions under which medical teaching and research have flourished; if the hospitals alone were nationalised, without a full state medical service, this great danger would be lessened, but it is likely that, as has happened in New Zealand, one event would soon be followed by the other. A criticism of the Emergency Hospitals Services is that there has sometimes been a failure to take full advantage of local knowledge; all questions of moment are referred to Whitehall so that the regions are by no means autonomous and the scheme is in reality highly centralised. Centralisation of this type, often unimaginative, taking no note of local conditions and local feeling, and perhaps in the administrative charge of people with no special knowledge of hospitals would be deplorable.

2. The cost of the nationalised hospitals would be high, since, apart from the extension of their work which would undoubtedly follow nationalisation, the medical, nursing and lay staff would no longer be expected to work for unreasonably low wages. On the other hand, the economies effected by the regional and divisional mechanism, including the saving on bulk purchase, a pooling of equipment and the closure of inefficient units, might be considerable. The bill would be paid largely out of forced contributions from all sections of the community, most of it as at present coming from the higher income groups. If the hospitals were financed on an insurance basis, on the analogy of the War Damage Act, the healthy would pay towards the cost of the sick and people would no longer have to carry the financial burdens of illness at a time when they are least able to bear them.

3. Whole-time government service tends to stifle initiative for several reasons. (1) Government departments do not usually punish for bad work but may refuse to promote. (2) Salary scales are more or less automatic and there is not sufficient inducement to staffs to improve themselves and the service. (3) Promotion is to a large extent by stepping into dead men's shoes, since most Government grading schemes make little allowance for exceptional ability. (4) The staff are often remote from the central department which recommends promotions.

On balance the disadvantages of running the hospitals as a department of the Ministry of Health seem to outweigh the advantages, since it is probable that sufficient attention would not be paid to the merits of the voluntary system and there would be a tendency to excessive rigidity and over-centralisation.

GROWTH OF PUBLIC CORPORATIONS

Since neither municipal management nor direct management through a Government department appears to be satisfactory and joint boards have many disadvantages and are difficult to get working efficiently, the suggestion that hospital management might be in the hands of an ad hoc board, moulded on the general lines of the boards at present managing some of the public utilities has been much discussed.

One of the most remarkable developments in administration has been the growth of the public corporations. The idea dates back to the old Improvement Commissions and Turnpike Trusts, which were gradually changed into Government departments or merged into the local authorities. Three of the present bodies, the National Health Insurance Committee (1912), the Road Board (1910) and the Port of London Authority (1908), were in existence before the last war and more recently the following have been added:

Forestry Commission (1919)
British Broadcasting Corporation (1926)
Central Electricity Board (1926)
Coal Mines Reorganisation Commission (1930)
Area Traffic Commission (1930)
London Passenger Transport Board (1933)

These public corporations supply such important needs that state regulation is necessary and yet they enjoy a greater measure of independence than a purely state department can provide. They are also in closer touch with the public than a state department usually is and are not dependent on the political complexion of the Government. They have been popular because they are a compromise which people of various political views can accept. They are run by the national authority, but their ability to collect capital from private funds and to pay interest gives them the support of upholders of private enterprise; also they are fairly free from political interference.

The Post Office is often quoted as showing that a state department can carry out these functions equally well, but it is significant that the changes considered necessary after the Bridgman Report were all in the direction of the organisation seen in public corporations. The public corporations mentioned have the following features:

1. They all control important services which must be run on business lines but must be responsible to the public.
2. They all have virtual monopolies.
3. Their revenue and expenditure should at least balance so as to ensure financial independence, while loans at least are subject to Ministerial sanction.
4. Except in the case of the Forestry Commission, members of Parliament are not allowed to sit on the boards.
5. They are responsible to a minister and he is answerable for them in Parliament, but he will not answer questions on the day-to-day running of the services and so Parliamentary control is remote. This tends to remove the excessive caution sometimes associated with Government departments, which are extremely sensitive to Parliamentary criticism.
6. There is public ownership and control of the assets. The assets of the B.B.C. are entirely owned by the corporation; those of the London Passenger Transport Board are vested in the community.
7. The boards usually consist of between five and eight members of which one or two are full-time and the rest part-time. They are usually appointed for a fixed period but not always for the same period, so as to ensure continuity. The directors of the B.B.C. can be removed by the Privy Council; those of the Central Electricity Board only by Parliament. Generally speaking, the boards are set up by the minister and not directly elected. Except in the case of the B.B.C. the members are mostly experts and power tends to be in the hands of the senior paid official.
8. The Port of London Authority is composed largely of consumers' interests, since there is a compact and organised body of consumers, while the consumers' interests in the B.B.C. and Central Electricity Boards are represented only through advisory committees.
9. Parliament has a general control of their policy and certainly has the direct ultimate control, since it can always remove what it has set up.
10. Conditions of service vary much in these different corporations and are not the same as those in the Civil Service. In the corporations it is easier to secure reward for merit and promotion may be rapid.

A NATIONAL HOSPITALS BOARD

When the hospitals are considered in the light of these points a good case can be made out for setting up a National Hospitals Board. It is presumed that organisation would be on a regional basis, probably run by divisional and regional councils having many of the features suggested in the Nuffield Trust Scheme. While hospital administration cannot be described as a commercial enterprise, many of the features in the list given would apply.

1. The hospitals form an important public service which should be responsible to the public. Much of the running of this service should be on business lines and a well-constructed board would give the amount of flexibility which is as vital for that service as for a business enterprise.

2. The hospitals, when merged into one system, would exercise a monopoly. The assets would be national.

3. The day-to-day running of the hospitals would be in the hands of the local, divisional and regional committees. The board would carry out general lines of policy for which the Minister of Health would be responsible. An annual report, drawn up so as to give some real information and not to act as a cloak, would be published, and Parliament would be able to raise questions of policy when the financial vote was under consideration.

4. The board would be a small one with not more than ten members with full executive powers. They would be chosen by the Minister of Health and would be mostly experts—medical, nursing and lay with some representation of medical teaching. Advisory committees would be set up by the board to deal with such special aspects as clinical education of students, finance, nursing and so on. The directors could be appointed for a fixed period, made variable so as not to permit of drastic change and removable, say, by the Prime Minister and the Minister of Health acting in the name of the Privy Council, as in the B.B.C.

5. Regional development would be encouraged and regional councils would have a measure of freedom. Data would be collected in a standardised form and a report made annually on the working of each unit and each region. Visitors, medical and lay, would carry out inspections to ensure that a reasonable standard was maintained and to give the advice which only people with authority and a detached outlook can give.

6. The board would have to be more in touch with the public than is the B.B.C., whose governors, at all events until lately, did not represent a cross section of public opinion, and there would be scope for an advisory committee representing patients' interests, without executive power but with access to the board. In each of the corporations so far established it has been difficult to maintain a desirable degree of independence without allowing an excessive remoteness from all public control.

7. Staffing of such a service would probably be on general Civil Service lines, but with the promotion on merit which at present exists in the public corporations.

A board of this type, provided that nationalisation is found to be necessary in order to secure coördination, would be in a better position to maintain the essential features of the voluntary system than a special department of the Ministry of Health, and would at the same time allow of some local autonomy.

TWO OTHER PLANS

The work of the University Grants Committee has led to the suggestion that grants to hospitals might be dispensed by a committee working on similar lines and so render nationalisation under either a Government department or a public corporation unnecessary. The committee consists of a full-time chairman, eight part-time members and a secretary, and it has the task of advising the Government as to the application of grants made by Parliament towards the cost of university education. The committee has full discretion in allocating this money and can make any inquiries which would help it to form an opinion, but it does not interfere in internal management or attempt to cramp the freedom in which university education flourishes. Needless to say, gross inefficiency would lead to forfeiture or reduction of the grant. The objection to control of this kind, which is similar to that exercised by the King's Fund for the London voluntary hospitals, is that although it would be applied, through the divisional and regional councils there would remain two parallel systems. It is doubtful also whether the mechanism would be strong enough to overcome the difficulties in the way of coördination which have been described, and as far as hospitals are concerned there would still be no national policy nor would the hospitals be an intrinsic part of the public-health services, which is most desirable.

Robson, in his book on the Development of Local Government, suggests another possible alternative to nationalisation. By the Education Act of 1902 voluntary schools receive rate aid in return for a measure of control by the local authority, who have the power to appoint two of the six managers. The teachers are appointed by the managers, but the local authorities can veto the appointment on educational grounds, and local authorities have the right of inspection and of regulating secular education. The voluntary schools maintain the fabric of their buildings but the local authorities pay the teachers and provide the stationery. As applied to hospitals such an arrangement would mean that in return for substantial rate aid local authorities would have considerable representation on the boards of management of the voluntary hospitals and might in certain circumstances exercise a deciding voice in policy. If applied to a regional scheme, this plan would imply the setting up of special joint boards of local authorities, which have not up to the present been a conspicuous success. Moreover, just as the arrangement permitted the continuation of the disagreeable feature of having two systems of elementary education, a similar one would retard the development of a coördinated hospital policy.

Neither of the last two schemes seems to me to have the advantages of a well chosen, strong, semi-independent national hospitals board.

MEDICINE AND THE LAW

Overdose of Local Anæsthetic

THE fatal administration of a local anæsthetic ten times stronger than the intended dose was investigated at an inquest lately held in Bath. A patient suffering from gallstones was advised to have an operation. A solution of Decicain was injected as an epidural anæsthetic. The honorary anæsthetist at the hospital asked the sister for a 0·1% solution, telling her that it was to be used for a nerve-block. By a regrettable misunderstanding the theatre sister thought that a 1% solution was asked for. After the injection the patient had a convulsion. Oxygen was given and artificial respiration was applied; an antidote to the decicain was injected and there was an injection of adrenaline into the heart; the heart was massaged. In spite of these efforts the patient died. The coroner's jury found that the overdose had been accidentally administered and attributed no blame to anyone. The coroner suggested that, to avoid such errors, the proportions of the drug should be prescribed in writing. This might fix responsibility as between the medical man and the sister, but even written instructions are not proof against human fallibility.

Defective's Claim for Illegal Detention

In Innes *v.* General Board of Scotland a mental defective's claim for £1000 damages on the alleged ground of illegal detention failed in view of the time-limit prescribed for such actions by the Public Authorities Protection Act. Innes had been received into the Baldovan Institution on an order dated May 11, 1932, which expired on June 30, 1933, and which was not validly renewed in terms of the 1913 Act. His mother repeatedly requested his release and eventually took proceedings whereby the court held the order for detention inoperative after June 30, 1933. The General Board for Scotland appealed unsuccessfully, and it was found necessary to deal with this kind of situation by statute in March, 1940. There was no doubt that the continuance of the detention had been justifiable on medical grounds, but courts take a strict view in cases where the liberty of the subject has been infringed. It may be recalled that the same point arose in England in the Winterflood case in 1938, when the position also required the attention of the legislature. The English act of 1913 contemplated that the order for detention of a mental defective should expire at the end of a year but could be continued in the patient's interest after examining medical experts and certificates. In the Winterflood case there was a gap between the date of expiration and the appropriate date of renewal; it is easy to understand that institutions concerned with hundreds of patients cannot always make sure of synchronising the two dates. Parliament then passed a law to allow a margin of time to cover these administrative steps. The statute for Scotland in 1940 had the like effect. When, however, the action for illegal detention was launched recently in the Innes case, it was clear that it was not begun within six months of the date when the wrongful detention ceased. This six-months rule, enacted by the Public Authorities Protection Act of 1893, was a bar to the claim against the Board of Control.

In England Now

A Running Commentary by Peripatetic Correspondents

WHEN Russia was attacked Mr. Churchill lost no time in declaring that this made no difference to our objective which was, is, and always will be, the crushing of Nazi Germany. The bulldog has his teeth into the dachshund and no poodle, peke nor macaroni hound shall pull him off, nor will he loosen his grip to consider what the other end of the dachshund is doing. Would to Heaven we had a like clarity of view in our fight against tuberculosis. Who is our enemy? The bacillus tuberculosis? Surely not. Would we abolish it from these islands if we could?—and have a rising generation perpetually Pirquet negative, defenceless against attack which would inevitably come in time? And if we don't know who is our enemy, neither do we know who is our friend, who it is that gives most of us immunity—the mildly infected cow, the pooler of milk, or the ambulant spitter who sprays the streets with his saprophytic guests? Until we do know, the host of T.O.s, health visitors and whatnot is an army without an objective, hesitant. Sometimes though rarely the enemy is fairly clear. Recently in an isolated community in the west of England two cases of tuberculous meningitis, several of pleurisy, a crop of adenitis occurred in the children attending the state school, where it emerged a schoolmistress with a liquid cough was disseminating the seeds of death with the rudiments of learning. And that is only the first harvest, for tubercle has two incubation periods—very roughly of three months and twenty years—and a long time must elapse, and memory fade, before the second harvest is gathered to the grave. Even here we don't know whether the catastrophe was due to the quantity of bacilli that were sprayed over the children or their quality, their virulence. Suppose the schoolmistress had been an old woman, who had had tubercle for years, and harboured what to her was an almost harmless bacillus, would she have vaccinated the children against a robuster germ, and been a benefactress? I dunno, but until we know these things the fight is feckless.

* * *

One of the things which like the profession of medicine appears to be due for a complete overhaul after the war is our national system of education. It has received some hard criticisms, more especially from those who have passed through the prep school to public school and university curriculum. It has been said that the system tends to turn out everyone cut to a pattern and that many of its products are tainted with at least some trace of totalitarian doctrine. People seem to forget that though you can take a horse to the water you can't make him drink. In fact if you take him too often to the water the horse may develop a loathing for water and a taste for beer, like the horses in the all-night beer gardens of Hamburg which the R.A.F. presumably have now laid low. In more medical language the pedagogue may easily produce immune bodies against the doctrine that he wishes to inculcate. In my own case a healthy distrust for all authoritarian doctrine was first inculcated in me by one of the masters at my prep school who when he was not telling us of the virtues of compulsory games was expounding the duty of loyalty to the cricket captain. Even at that early age I had a suspicion that compulsory games were encouraged (they are a post-Arnold development) rather for the convenience of the masters than for their positive value to the boys, while as for loyalty to one's cricket captain it was of the same order as "theirs not to reason why" however big a boob one's captain happened to be. All the same, my early training or immunisation has been of great value for after all "das Führer-princip" is nothing but loyalty to one's cricket captain writ large, while a belief in the mystical value of compulsory games is in all respects equivalent to a belief in the philosophical values arrived at in a hypothetical nordic stone age. Nevertheless the curious thing is that however much one may loathe the totalitarian system it is very hard to loathe the individual totalitarian.

B, for instance, whom I had last seen in 1935, was a typical little Prussian. He had become, so I was told, quite openly the leader of the Nazi party in the Canaries; but when I ran into him, either by accident or his design, in the main street of Las Palmas, it was difficult to feel hatred for him. He was a broken man, for both his sons had been lost flying over England. Major D, on the other hand, was a different type. According to his own statement, and no-one was in a position to contradict him, he was an Italian air ace, but this had not prevented his crashing at an early stage of the proceedings in Abyssinia and he was now on his way from one prisoners-of-war camp to another. He was obsessed with the idea that London was completely flattened to the ground and though I assured him that I had been there less than a fortnight before nothing that I could say could shake his fixed belief. People with obsessions may be interesting as psychological cases but it's difficult to work up anything so strong as a feeling of hatred for them.

The Italian medical men whom I met as prisoners were one and all only too pleased to be finished with the war and only too ready to talk of their experiences in East Africa. I learnt a number of interesting things from them. C, I found, had in this war been wise in his generation and kept well away from Ethiopia. Incidentally he does not seem to have wasted any of his hygienic knowledge on the town from which he derives his title. One tip the Italian medical officers showed me is worth recording. All their quinine tablets were heavily impregnated with methylene-blue. There were among the Italians therefore no "quinine resistant" cases of malaria such as occurred in our army in the last war, nor was it necessary to carry about, as our French colleagues did, bottles of Tanret's solution. I was not surprised that the Italians were relieved that they had finished with the war when a day or two later I went into Abyssinia by way of Gallabat and Metema, from which the Italians had withdrawn a few days previously. What had once been flourishing little towns had now been utterly destroyed, while the whole earth on which they stood was pock-marked with bomb holes. Bombs in fact when used systematically produce an effect like concentrated shelling, though here, since the ground was hard and rocky, the craters were small and shallow. Scattered over the ground were thousands and thousands of clips of Italian bullets, water bottles, helmets. In some places it recalled the Caledonian market on a gala day. F, who was with me, picked up an excellent pair of stirrups and stirrup leathers. Someone had in their panic thrown away a splendid python skin nearly fifteen feet long, while everywhere lay Chianti flasks, empty it is true, and, more curious still, bottles of Italian mineral water from a spa not far from Rome. The transport of all this liquid refreshment must have been no light undertaking. To anyone who knows the modern Italian there has always been something comic about Mussolini's efforts to revive the glories that were Rome, but if laughter was one of the emotions that Gallabat called up it was soon submerged in pity for those who imagined that their national prestige could be enhanced by making more deserts to add to those they already possessed. Primarily their education must have been at fault, for instead of making them immune to all authoritarian doctrines it had merely set up a chronic infection, associated with hypersensitivity. However much our own educational system needs overhauling that of the Italians and Germans is even more in want of revolutionary change. It will be no light task to desensitise them for all time against authoritarian myths, but unless we do there is little chance for the peace of the world.

* * *

So King Leopold is quite a stout fellow after all! Though why the M.O.I. who had the information all the time shouldn't have told us seems extraordinary. It will, however, do him good; a spot of obloquy, especially if unjust, seems to have a very toughening effect. The present Archbishop of Canterbury had a dose of it in the last war, while the quality of our Prime Minister's fibre is due to some extent to those Cassandra years when he chewed the orange-peel of outcastry. I confidently predict that if P. G. Wodehouse survives the storm caused by his broadcasts, which I have not heard, he will produce a firmer Jeeves, a more fibrous Wooster. No, the man I am sorry for is Naaman. For thousands of years now and for thousands of editions

he has been held up as rather more than a snob for not liking the Jordan baths. Do we know all the facts? Some time ago a patient of mine with hyperpiesia went up to see a specialist who later wrote him a letter which I saw. After recalling rather in the manner of prosecuting counsel that his father died of cerebral hæmorrhage at the age of 72 and his mother of cancer at 70, he went on to state unhesitatingly that the patient was born with, had been suffering all his life from, and was still suffering from the results of intestinal toxæmia. A strict regime was prescribed, no meat, eggs only if absolutely fresh, and on no account must anything be cooked in an aluminium utensil. Taboo to tobacco and alcohol, fie on all gluttony. He must come up and have a course of colonic lavage and osteopathic manipulations; he must have intramuscular injections and take pills of two kinds; further a salve will be sent to him and a vaccine made from the flora of his intestines. Woe to him if he follow not the precepts of this prophet, but if he does he may yet walk among the blessed. How do we know that Naaman hadn't received some such missive from the hydropathic establishments on the Abanah and Pharpar?

* * *

The certificate menace grows apace. Owing perhaps to the increasing mistrust spread among us by the Little Cad over the water, panel patients now seem to require not only N.H.I. certificates but also sundry additional slips of paper to show to various interested parties such as employers, insurance companies and so forth. Among the newer types of official certificate is one, inappropriately coloured yellow, for those injured in air-raids. When the stout-hearted victim is doing his best to recover from half a dozen fractures and various blast injuries it seems a trifle redundant that he or she should have to be re-certified unfit for work as often as once a week; a monthly certificate would save paper, ink, postage and—what is seldom considered by the official mind—the doctor's time. The conscription of women has given rise to an entirely new type of certificate which has not yet attained the dignity of print and has to be written out in full.

Mrs. (or occasionally and most regrettably, Miss) . . . , being x weeks pregnant is at present unfit for any other kind of national service.

Tempora mutantur. The time-honoured boast of the sergeant-major that the army can do what it likes with you except put you in the family way no longer needs even that qualification.

* * *

Last night dear Percy, our mess bore, was holding forth on how Nature thought of everything first, the hypodermic syringe of the mosquito, the smoke-screen of the cuttle-fish and so on, when one of our younger members, tiring of these immense profundities flippantly interjected, "What about an air-gun?" But, of course, Nature does have a most excellent air-gun, whose missile provides the air which onrushing peristalsis compresses. Not only does her ordurous pellet give off gas behind itself, where being more compressible it acts as a pusher, like the back rows of the scrum—sometimes slipping round, I suspect, and getting off side when the muscle-tone is slack, for which we pay a costive penalty—but it also gives off gas in front which, like the pilot engine before a royal train, or the bag of waters in labour, goes forward to clear the course. A dozen aspects of this entertaining mechanism present themselves—how in the upright position gas will tend to accumulate at the hepatic and splenic flexures, sort of ammunition dumps; how this air-gun is held as all guns should be when not in use with barrel pointing downwards; how at the moment of discharge the barrel becomes nearly horizontal—or would be if the Jove-aping dignity of man and the closet-designer allowed. Is it likely that Nature wouldn't utilise a product she can't help forming? Yet there is little in the textbooks about it. Isn't it important enough? It is of vital importance to king and cowherd. Then there is the comparative anatomy: the machine-gun method of the rabbit, the bomb of the herbivore, the torpedoing of man. What a subject for a thesis, "The Aerodynamics of the Intestine"!

Parliament

Priority for Milk

IN the House of Lords on July 15 Lord DAWSON once more voiced his anxiety about our milk supplies for the coming winter. The production of milk is like a reputation, very easy to lose and difficult to regain, and unless we are to face a curtailment of our milk we must act at once. The cow gives us more value for our money than any other animal, the egg-producing fowl and the pig coming next, and they all deserved special consideration. But apart from their high nutritive value milk, cheese and eggs helped enormously in the preparation of winter foods such as cereals, potatoes, carrots, beans and even onions. Indeed it was almost impossible to think of cookery in this western world without milk and eggs. Lord Dawson congratulated the Minister of Food on the improvement in the cheese position and on his store, actual and prospective, of preserved milk. Lord Dawson further urged the manufacture of sprayed whey powder, which could be prepared from waste products. In designing our food we must be influenced by neither prejudices nor interests, and give knowledge pride of place.

The Duke of NORFOLK'S comforting reply on behalf of the Ministry of Agriculture that dairy herds in this country are increasing, lost some of its reassurance when he admitted that next winter there may be a slight shortage of milk. Lord DAVIES reported the incidence of a new infectious disease—the black market instead of the black plague—and the discussion which followed was enriched by a wealth of controlled reminiscences and shopping sagas. The House felt sympathy with Lord WOOLTON when he confessed that he found it extraordinarily difficult to retain a proper sense of perspective in dealing with food. Complacency was the latest of modern crimes, but he felt that no-one without the skin of a rhinoceros could be complacent as minister of food. At first he had been inclined to think that the public were the best judges of whether they were being adequately fed; but before the war there was no acute consciousness in this country that so many hundreds of thousands of people were suffering from malnutrition. The country has become more sensitive to this issue during war-time than ever it was in peace, and it is good that it should be so. Yet he would venture the speculation that there are fewer people suffering from malnutrition now than two years ago. Food is certainly more equitably distributed than it was then. This year the nutritive values of foods have declined, but next year they should be as high as they have ever been in the last 15 years. He was hoping for some improvement in the variety of the nation's dietary, which partly explained the new yellow ration books. During the winter he had no doubt that with the help of New Zealand and the United States we should secure all the milk that we required in one form or another for the National Milk scheme, for children, for adolescents and for invalids.

A Stepping-stone

The scanty attendance at the second reading of the National Health Insurance, Contributory Pensions, and Workmen's Compensation Bill showed that at least the House found nothing objectionable in the measure. Indeed they welcomed it, with some exasperation, as far as it went, but that was not nearly far enough. Second-reading debates, as Mr. BROWN said, give members who have long-cherished ideas and ideals opportunities to get their dreams a-going, and the debate on July 15 demonstrated a tepid approval of the bill but a strong disquiet at the glaring discrepancies in our present system of social insurance. People with the same need receive different benefit; the sick breadwinner and his dependants are treated differently from the unemployed worker and his family; the disabled man and the disabled woman do not receive equal help; benefits vary from one approved society to another; some insured people have difficulty in finding any approved society to accept them. Mr. GRAHAM WHITE spoke for the House when he said, "Let the bill be passed as soon as may be, and let us concentrate upon the wider proposals to follow the deliberations of the Beveridge Committee."

The bill, which was introduced on the 29th birthday of N.H.I. by Mr. T. JOHNSTON, proposes an increase of

3s. a week in the sickness benefit—memorable since for the first time men and women are to receive an equal increase—and the disablement benefit is to be increased by the same amount. Further, the bill provides a new income-limit of £420 per annum, which will bring in something like 500,000 more people. The income-limit under the Workmen's Compensation Act will also be raised to £420. There will be an increase of 2d. in present premium of 3s. 6d. for men and 2s. 11d. for women, 1d. to be paid by the contributor and 1d. by the employer. In future the public-assistance authorities will be prohibited from taking into account the first 10s. 6d. of national insurance benefit. The changes under the bill will begin in January next year. Mr. Johnston explained that the panel doctor's capitation fee will be increased, but the amount plus a mileage grant is still under consideration.

Mr. JAMES GRIFFITHS said social insurance had its roots deep in nineteenth-century life and welcomed this expansion. He warned the House that we might not have so long to build up a peace economy as we had taken to build up a war economy. Part of the trouble at present was that the workers were thinking of the past and the employers of the future. Dr. H. B. MORGAN as a former insurance practitioner criticised the working of what he dubbed an elementary medical service. There were no hospital arrangements or facilities for pathological and biological investigations. The poor general practitioner working in an environment of disease, bad housing and dietetic ignorance, was told to sift cases but was given no proper facilities for diagnosis. Dr. Morgan had left insurance practice disappointed and disillusioned. No doubt the Minister had acquired some medical knowledge by inoculation but Dr. Morgan had been hampered in his work at every stage by the administration of medical services under the Ministry of Health. He urged the Minister to deal with these men in a spirit not of bureaucracy but of decent humanity, giving consideration to the difficulties of their job.

Mr. ERNEST BROWN in summing up said he did not want Dr. Morgan to think that he had overlooked that there was more than a cash side to the insurance scheme. There was a medical side too, and he was sure that one of the things that the Beveridge Committee would have to consider was how the doctors, the public and the state could get the best, from the point of view of preventive medicine, out of the provisions that had been made, or might be made in the future.

The Pharmacy Bill in Committee

The House of Commons when it examined the Pharmacy and Medicines Bill in committee, on July 15 and 16, made no great changes in it. The Government accepted an amendment to clause 1 moved by Captain G. S. ELLISTON making it unlawful for any medicine to be compounded in branch businesses belonging to chemists unless there was a registered pharmacist in charge.

Clause 3 provoked a lively discussion. Dr. RUSSELL THOMAS welcomed it as a sign that Parliament was taking an interest in the advertisements of medicine; otherwise he believed it to be futile in that it would not affect the patent medicine trade; the list of diseases defined was meant to be impressive, but sufferers from diabetes would use patent remedies until the disease was diagnosed, and there was nothing in the Bill to prevent a person using all sorts of eye-drops until cataract was diagnosed. Mr. H. STRAUSS asked if the clause was directed against any advertisements in existence. If not it looked as though it was not the best way of dealing with an actual evil. It would be better to make it a criminal offence to publish a false statement in connexion with the sale of a medicine. Miss F. HORSBRUGH said that the diseases specified in the clause were among those included in the recommendations of the Select Committee of 1914. Two more had been added. She assured Captain W. F. STRICKLAND that there was no intention to make any difference between municipal and voluntary hospitals. If there was any doubt as to whether all the hospitals were covered the point would be re-examined. Dr. H. B. MORGAN said he was in favour of the bill as a whole, but he was not sure that this was not a most dangerous clause. Would a doctor who had been struck off the register for some minor offence be unable to advertise some cure which he had discovered, or was he only to be allowed to do so with the sanction of the Ministry of Health? He claimed that such a man should be allowed to exploit his discovery, to advertise it and to keep it secret if he wished to do so. Miss HORSBRUGH said that if a doctor who had been struck off the roll made a discovery he could communicate it through other people such as members of Parliament and local authorities. The clause was agreed to.

Mr. JAMES GRIFFITHS was anxious that the composition of medicines should be stated in English. Mr. E. BROWN said that it would be difficult to describe every preparation sold as a medicine intelligibly except to a nation of pharmacologists. The ideal would be that every single thing used in the making up of the medicine should be described in such simple English terms that Shakespeare might make a poem out of them. Sir ROBERT BIRD appealed for quantitative disclosure. Prof. A. V. HILL sadly remarked that the art of writing descriptions in unintelligible terms had been highly developed. Mr. BROWN promised if the House would accept his amendment of "accepted scientific name, or other name and descriptive of the true nature" at this stage he would re-examine the matter before the report stage, and his offer was accepted.

Sir THOMAS MOORE'S amendment to exempt herbalists from defining the compound parts of their preparations was turned down with some firmness. An amendment by Captain ELLISTON extending the date when the Bill would come into operation from January, 1942, to July, 1942, was accepted.

Three new clauses were moved. Mr. BROWN'S proposal that inspectors under the Food and Drugs Act should enforce sections 3, 4, 5 and 6 of the Act was added to the bill. Further discussions on what Mr. Brown called the professional and technical enforcement are proceeding. Sir E. GRAHAM-LITTLE, after discussion, reluctantly withdrew his proposal to forbid the sale under a fancy proprietary name of a preparation listed in the B.P. or B.P.C., when Mr. BROWN pointed out that this innocent-looking proposal would make the measure into a new bill. Sir DYMOKE WHITE'S clause restricting the distribution of new proprietary medicines to chemists was turned down.

QUESTION TIME

Additions to our Food

Mr. G. MANDER asked the Parliamentary Secretary to the Ministry of Food into what form of food the minimum daily requirements of the most important vitamins and minerals were being introduced; whether he was aware that the United States of America were anxious to send us synthetic vitamins occupying negligible shipping space; and whether advantage would be taken of this.—Major G. LLOYD GEORGE: Steps are being taken to obtain from the U.S.A. such quantities of vitamins as are desirable to supplement the amounts available in the form of natural foods. Medical and scientific advisers consider that the only mineral deficiency which is to be feared under war-time conditions is calcium. Recommendations for dealing with this possible deficiency are now under consideration. In answer to a further question from Mrs. RATHBONE, Major LLOYD GEORGE promised to give speedy consideration to the addition of calcium in both white and wholemeal-flour bread.

Venereal Disease in Jamaica

Dr. H. B. MORGAN asked the Under Secretary of State for the Colonies whether he was aware that a visit of inspection paid to the venereal disease clinic in Kingston, Jamaica, had revealed that, amongst the patients found awaiting appropriate treatment, were two young girls, seven years of age; that these children were diseased not by hereditary infection, but by direct contact; how many such cases existed in Jamaica; and what steps had been taken or were being taken to ascertain the perpetrators of such crimes with a view to punishment.—Mr. GEORGE HALL replied: I have no knowledge of the two cases mentioned, but, although no definite figures are available, the medical officer in charge of the Kingston clinic estimates that a quarter of the children attending the clinic are infected by direct contact. The governor reports that cases are from time to time reported to the police who press the charge, but that such cases are very difficult to establish. In many instances where a child is infected, the parents are very loth to give information to the

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Letters to the Editor

PREMARITAL AND PRENATAL TESTS

SIR,—In this country it has always been found to be wise policy to avoid legislation which is in advance of public opinion. Public opinion would almost certainly be in opposition to legislation on American lines enforcing Wassermann tests, but it would probably raise no objection to such tests being carried out as a routine in pregnancy if obstetricians recommended it. Medical opinion carries great weight—more weight than we ourselves often give it credit for. In our prenatal clinics it is not the expectant mothers who object to blood-tests, it is the doctors in charge of the clinics who still raise objections to their routine performance. During the last five years, over 4000 specimens of blood for examination have been taken in the Kensington clinics without the slightest difficulty. In fact, some patients comment adversely on other clinics where the investigations made are less complete.

As your leader of July 12 aptly puts it, any case of unsuspected syphilis discovered and treated is a gain to the nation. It is a pity that the routine performance of Wassermann tests, which had been slowly gaining ground, has been discontinued by some hospitals during the war; the tests are more necessary now than ever, and the idea of blood-testing and transfusion has become so popularised that there can be no difficulty in obtaining the blood for examination. As the adjunct to a full prenatal overhaul and as a routine measure carried out in every case without exception, it can have no bad psychological effect on the individual patient. Public opinion is now bringing expectant mothers to private doctors, clinics and outpatient departments early in pregnancy; the issue of milk at a cheap rate is encouraging this tendency. All things seem ready for the institution of a routine prenatal blood-test throughout the country if the obstetricians would agree among themselves to establish the principle. Experts in venereal disease would be repaid by the lessened incidence of congenital syphilis.

A premarital test represents a new idea, hitherto alien to Britain, and the question needs to be considered in all its aspects. It is a much more difficult question than the prenatal test. Most of the expectant mothers with positive blood reactions in the Kensington series of cases have either been latent cases of long standing or congenital cases; in only one or two instances was the infection a recent one. By intensive treatment during pregnancy one has had a reasonable degree of confidence that the baby, apparently healthy at birth, will remain healthy. The question at issue is whether, if the mother's positive test had been discovered before marriage, a better or even as good a result would have been obtained. Would the marriage have been cancelled? Some of them have been happy and successful marriages and surely a last-minute cancellation for such a reason would cause severe psychological trauma to both parties? It would be an unenviable task in any case to inform the bridegroom within a few weeks of the announced wedding that his prospective bride was a congenital syphilitic. In the best of circumstances one feels that a shadow of disease and possible guilt would be thrown over the marriage, and it is conceivable that it might have the effect of causing the wife to try to avoid a blood-test, should she become pregnant, instead of seeking early treatment. It is certainly much easier for the doctor to break the news of a latent positive test in the mother both to her and to her husband, tactfully, and without undue psychological reaction, when they have already been married for some time.

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police, owing to the fact that they do not desire any publicity, and feel it may reflect on the child's future. As regards cases admitted to the clinic, but not reported directly to the police, no action is taken. It is very difficult to obtain histories, and in many cases, parents or guardians are reluctant to give information. It is considered to be undesirable to press questions, lest the children fail to return for treatment, as has happened on previous occasions.

It is possible that arguments as strong or perhaps stronger might be raised to support a test before marriage, and many of us still feel that we are waiting to be convinced on the matter. Should the desirability of a premarital test be established, it should be brought about voluntarily by the introduction of premarital clinics where tests could be taken, rather than by attempted legislation.

It would seem a pity to restrict the function of a premarital clinic solely to the performance of Wassermann tests which after all only affect a small proportion of the population. A short routine examination on life insurance lines would seem of definite advantage, both to the prospective couple and to the state. From the sociological as well as the medical point of view, such clinics, which have often been proposed, present interesting possibilities on the psychiatric side. For most couples no advice would be necessary and the doctor would only need to wish them luck. In other cases, however, much good might be done by answering questions and relieving doubts. The whole subject seems worthy of discussion as a part of postwar reconstruction.

Kensington. VIOLET RUSSELL.

URINARY DISINFECTION

SIR,—Your leader of June 28 mentions the use of small doses of a sulphonamide in the control of urinary infection. In Helmholz's case a dosage of 0·125 g. of sulphathiazole twice daily had succeeded, over a period of seven weeks, in keeping a chronic and apparently incurable infection in check, without causing any general toxic effects. There are records of other cases, successfully treated over much longer periods, in which the drug used was given at a rate half of that employed by Helmholz. As far back as March, 1940, a Cape Town urologist told me of a middle-aged woman patient with normal excretion, whose *B. coli* infection had been controlled for over eighteen months with doses of 0·25 g. of sulphapyridine taken once every forty-eight hours. The experimental omission, on a number of occasions, of several doses had invariably been followed by a return of the bacilluria. A Brisbane pædiatrician subsequently showed me the notes of a similar case of a child where the same drug and the same dosage was employed.

The administration of such small quantities of a sulphonamide appears to be attended with none of the symptoms of intolerance (gastric upset, mental depression, dermatitis, and damage to the kidneys or blood-forming organs) recorded with the higher dosages ordinarily employed; but proof of this can be obtained only after prolonged observation of a large number of cases. In the selection of the appropriate drug and dosage regard must be paid to bactericidal power and to rate of excretion. Sulphathiazole appears to be the most active of the sulphonamides in common use but, on account of its more rapid rate of excretion, it seems unlikely that one dose repeated every forty-eight hours would be efficacious. Whichever drug is used in such minimal amounts, it is certain that the concentrations attained in the body fluids must be very low. One is tempted to ask what effect this light dosage may have on rendering bacteria drug-fast.

Dagenham, Essex. ROBERT FORGAN.

"SCIATICA"

SIR,—Foot-trouble as a possible cause of sciatica has not been mentioned in the present series of letters, although well known by many. A short note of three such cases will help to emphasise this point.

CASE 1.—In 1931 a woman of 37 started pain in the left buttock, thigh and leg. The pains occasionally shifted to the area supplied by the anterior crural nerve. Treatment, including an energetic course at Bath, produced only slight temporary improvement, followed by exacerbation of the sciatic pains, so that the patient became almost crippled. I suggested a trial of an instep-arch support owing to extension of pain and tenderness to the left foot. I thought that metal or other hard substances, which could not be altered in shape or thickness, ought to be avoided. Having decided to use thin wedges of sole leather I found that Messrs. Freeman, Hardy and Willis stocked the kind required. It consists of a special form of insole with compartments into which thin wedges of leather can be inserted. The front compartment

under the transverse metatarsal arch and the toes may, or may not, need a very thin wedge. Into the compartment opening along the inner edge, one, two or three leather wedges are inserted to obtain the greatest possible degree of comfort. I much prefer these separate leather wedges to one thick wedge of moulded rubber. As a precaution the supports were put in the shoes for both feet, and on leaving the shop the patient was able to walk in comfort for the first time in 18 months. All sciatic pains disappeared soon afterwards. The supports were used for eight years as there was a tendency to recurrence of sciatica when they were left out of the shoes while engaged in strenuous housework. They have not been needed during the past year.

CASE 2.—In 1937 a sister of this patient had an attack of subacute sciatica which did not yield to medicinal treatment as quickly as desired. She then obtained instep supports similar to her sister's. The pain quickly subsided, and she left off using the supports after six weeks. There has been no return of pain.

CASE 3.—A man of about 55 had to give up working as a village postman owing to very severe "sciatica." After treatment in bed for some weeks, at home and in hospital, he attended the outpatient department for about a year. He was then told that nothing more could be done to relieve the pain. He was still in misery every time he put his foot to the ground. His son heard of the benefit derived by the first patient from instep-arch supports and got a similar pair. His father put them in his boots on a Saturday afternoon and promptly went to see a cricket match. He announced, on returning home, that he had had no pain; nor did the sciatica return subsequently.

Haynford, nr. Norwich. ALLAN EDWARD MAHOOD.

DI-IODOTYROSINE IN TOXIC GOITRE

SIR,—Mr. Wass underestimates the material which exists in this country for the study of thyrotoxicosis. If he had referred to the synopsis of three lectures on Toxic Goitre which I delivered in May, 1939, at the British Postgraduate Medical School (*Brit. med. J.* 1939, **2**, 436) he would have found that I had used di-iodotyrosine as suggested by Harington in over 600 cases. This was given in the form of tablets prepared by Messrs. British Drug Houses, the dose employed being usually 2 tablets thrice daily—equivalent approximately to 40 minims of Lugol's solution in 24 hours. Since 1938 we have added considerably to the series treated in this way in my clinic, though we do not now employ di-iodotyrosine as a routine for reasons which seem to us cogent—viz., it is relatively expensive and it is no more efficient than is Lugol's solution, though its portability makes it a convenient method of administering iodine. But it is, I think, misleading to suggest that di-iodotyrosine has the advantages over iodine which Harington believed on theoretical grounds it might possess; he has never claimed that it exhibits any of these virtues in practice. I think, therefore, that Mr. Wass is over-optimistic if he hopes to influence favourably with di-iodotyrosine cases which fail to respond to iodine or which have become recalcitrant to its action.

Harley Street, W.1. CECIL A. JOLL.

VILLAGE SETTLEMENTS IN WAR TIME

SIR,—Dr. McDougall is not strictly correct when he says in his letter of July 19 that "the association of a general hospital cheek by jowl with a sanatorium is something new in medical organisation in this country." Although the name of Osler is not primarily associated with the war on tuberculosis, it was ever uppermost in his thoughts. On many occasions he stressed the importance of a sanatorium being run in conjunction with a general hospital. As a tribute to this ideal, the Osler Pavilion, which is the sanatorium for Oxford and district and at the same time a unit of the Radcliffe Infirmary, was opened in 1926 by Mr. Neville Chamberlain, then Minister of Health. This association has undoubted advantages—the patients are within easy reach of any type of consultant, are near their relatives, and yet have all the benefits of a sanatorium. No less is this so from the teaching point of view—the students have ready access, and pulmonary cases can be and are used for final examinations. Gone are the days when it took most of an afternoon to complete the journey to and from the sanatorium. That such a scheme can work is shown by the fact that the number of beds at the Osler Pavilion has more than doubled since 1926. The important factor for continued success is the absence of dual authorities. In the presence of the latter the scheme will break down sooner or later.

Oxford. JOHN GRIEVE.

POSITIVE SYPHILITIC TESTS IN HEALTHY PEOPLE

SIR,—The question whether positive syphilis tests may occur in non-syphilitic people, as discussed in your annotation of May 10 (p. 606), requires careful consideration. If care is taken to use suitable antigens and a technique adapted to them, false positive reactions will be very exceptional, even in blood from patients suffering from a variety of diseases other than syphilis or from pregnant women. Great progress has been made during the last decades, but the aim has often been to increase the sensitivity of tests, and the necessary specificity has sometimes been insufficiently considered. In cases giving false positive results it is general experience that only one or some tests give positive reactions while others do not. It is often advisable, therefore, not to rely on a single test. The more tests that are performed and the more they agree the more certainly is the result diagnostic of syphilis. This remains true in spite of improvements in technique and reliability of the tests.

False positive results are due to an increased "lability" of the serum proteins, and are not true antigen-antibody reactions. This lability is nearly always sufficiently reduced by heating the serum to 55° C. or, in some flocculation (clarification) tests by using higher salt concentrations. Since non-specific reactivity is very exceptional even in pregnancy or diseases other than syphilis, false positive results in really healthy people must be rare indeed. The fact that animal sera often react positively with antigens adapted for the examination of human serum must not be taken to imply that the serum of healthy people sometimes gives positive reactions. The non-specific reactivity of the antigens depends on the colloidal structure of the serum, and this structure differs in various animals from the structure in man. Thus antigens and methods suitable for the serodiagnosis of human syphilis cannot be used successfully for the examination of syphilitic rabbits; for that, specially prepared antigens are needed with a lower content of cholesterol. It is a lucky chance that human serum has a relatively high degree of stability. Eagle's report (*Amer. J. Syph.* January, 1941, p. 7) on an attempt to distinguish "biologic false positive" reactions from cases of latent syphilis is not available to me at present, but I should like to mention a method elaborated in my former department by Witebsky (*Z. ImmunForsch.* 1933, **80**, 323) by which it is possible, when the serum originates from a syphilitic patient, to recover the antibodies from the flocculates by elution at 55° C., and thus to differentiate syphilitic reactions from false positive ones. According to Bier and Trapp (*J. Immunol.* 1941, **40**, 465) this method may be improved by using 10% sodium chloride solution instead of 0·9% saline for dissociation. This procedure corresponds to that used by Heidelberger (*J. exp. Med.* 1936, **64**, 161) for the dissociation of complexes of pneumococcal carbohydrates and their antibodies.

Trinity College, Dublin. H. SACHS.

SAMPLE OF PUBLIC OPINION

SIR,—In the large number of bodies that are beginning to occupy themselves in medical planning, little opportunity has so far been given for the general public to voice its views. When the claims and counter claims for a state salaried service versus private practice are being put forward by the profession, these usually include the profession's own interpretation of what the public would like. It is to be hoped that medical planners will now pay attention to the results of the Gallup survey you published on July 12 (p. 59). Asked to choose between (*a*) all doctors and hospitals under state control, (*b*) extension of the panel system to include everybody, and (*c*) having a private doctor, the answers from a cross-section of the population were 55% for (*a*), 30% for (*b*), and 15% for (*c*). In other words, more than half the population surveyed was in favour of state control and a minority for extension of the panel or for simple private practice. When the group was broken

down into subgroups, it is not surprising that the chief predilection for private attendance was among those with higher incomes, but even among these a state service was preferred to extension of the panel system. The questions posed may have been unduly simplified, and the validity of the survey is subject to the usual errors of sampling, but such surveys are being relied on to a considerable extent both in the U.S.A. and more recently in this country as a gauge of public opinion. It seems justifiable to regard these results as evidence that the general public believes that the present medical services are not satisfactory and that a state service would be advantageous, particularly for its less wealthy sections.

CLINICAL RESEARCHER.

Public Health

Medical Care for Norfolk Evacuees

ON July 1 a scheme was introduced in Norfolk for the home treatment of accompanied children, mothers and other adults evacuated to reception or neutral areas in that county. Dr. T. Ruddock-West, county medical officer of health, drew up the plan of campaign which has been approved by his council and the Ministry of Health. Briefly the idea is to pay a quarterly capitation fee of 7*s.* 6*d.* to district medical officers for each evacuee they attend at the request of the relieving officer. This fee is to cover travelling expenses and the usual medicine and appliances provided under national health insurance, but where an illness involves continuous attention for more than three months 30*s.* will be paid, whether the illness continues over the whole year or not. Back payment is to be made to the district officers for the work they have already done, and as some doctors may not have kept records of their evacuee patients the payments will be assessed in proportion to the claims submitted next September at the end of the first quarter.

Beginning at the other end the scheme works equally simply. Evacuees will apply to the relieving officer in the usual way for a medical order and on application to him will receive a combined evacuee medical order and report form to cover the current quarter. The patient takes this form with him and the medical officer keeps the order until the end of the quarter, recording the date of each visit or attendance at his surgery on the back of the form. No fee will be paid unless the claim is supported by the completed medical report, and in cases of acute illness where a patient is seen before a medical order has been made out the appropriate forms should be obtained forthwith from the relieving officer. The scheme does not of course cover unaccompanied children for whom the Ministry of Health made provision (circular 1882/1939) through the local medical emergency committees.

From the Annual Reports

STOCKPORT AND PRESTON

Dr. John Yule reports that in Stockport 583 out of 1833 deaths, in 1939, were certified as being due to heart disease, of which 412 were over sixty-five. Of 177 men and 277 women who had survived their seventy-fifth year, 85 men and 133 women were certified as having died of heart disease and 29 men and 50 women of other circulatory disorders. Only 6 male and 17 female deaths are referred to senility; but, with the exception of 13 male and 18 female deaths from cancer, 2 male suicides and 3 male and 10 female deaths from accident, it would not be amiss had all the rest been attributed to senility. Similarly in Preston Dr. F. A. Sharpe reports that, of 1435 deaths at all ages, 802 were of people over sixty-five, of whom 365 were certified as having died of heart disease and 107 from other circulatory diseases; 24 people over seventy-five had their deaths attributed to senility, but, excluding 14 deaths from violence, 23 from cancer and 2 from peptic ulcer, the remaining 310 might also have been ascribed to senility.

All death tables of recent years show two great shifts from those of the past—a steady increase in the proportion of deaths over sixty-five, and in those attributed to heart disease. This does not mean that heart disease is increasing, or that people with diseased hearts live longer than they did formerly, but that the potential life of the heart determines the length of our existence, and as the adventitious causes of death are reduced or eliminated more of us die from the natural failure of our potential. In neither town was there any fatality from heart disease in children under five years, and only 21 in Stockport and 10 in Preston in people under forty-five.

CHINGFORD

This borough is on the extreme fringe of London; it is mainly residential and has not grown with the rapidity of Ilford. The population is 39,460 and in 1939 it had a birth-rate of 16·9; the very low infantile mortality of 22; crude death-rate of 6·8 (comparable rate 7·8); and maternal mortality of 1·5 with one death only, none from puerperal fever. Its cancer death-rate was low for such a unit (1·2), made up of 48 deaths, of which 22 were from cancer of the gastro-intestinal tract, 4 of the lungs, 6 of the breast, 8 of the genito-urinary organs (3 males and 5 females) and 8 (5 males and 3 females) various. There is some doubt whether the brisk rise in recent years of recorded cancer of the lung can be attributed entirely to better diagnosis or is partly due to highway conditions (tar-spraying and exhaust fumes).

Dr. G. B. Murray, records a substantial rise in notified tuberculosis in 1939 over that of recent years: 53 pulmonary cases, which is about 30% above the expected number, and 17 other cases—nearly 3 times the number reported in any of the previous five years; of the new cases 32 were transfers from other districts. There were 19 deaths from tuberculosis.

From the School Reports

LEICESTER

Dr. E. K. Macdonald's school report has a bearing on the complicated question of nutrition. In classifying about 11,000 children into the four grades of nutrition, he found 82 obese children whom he placed in a group apart and made the subject of a special inquiry, carried out and recorded by Dr. K. McAlpine. Two types of obesity were distinguished—that with and that without definite sex manifestations. The number of cases so far scrutinised is too small and the inquiry has not gone far enough for Dr. McAlpine's findings to be reckoned as more than suggestive, but if pursued they may throw much light on many obscure points in development. Fatlings have always been puzzling; by some observers they are grouped with the "excellent," by others with the "bad"; but probably obesity in children is usually, if not always, due to faulty endocrine balance. Many observers have noticed that some evacuated children tend to obesity which in incidence suggests the influence of a psychological and not a nutritional factor.

Infectious Disease in England and Wales

WEEK ENDED JULY 12

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 732; whooping-cough, 4840; diphtheria, 773; paratyphoid, 293; typhoid, 25; measles (excluding rubella), 5368; pneumonia (primary or influenzal), 531; puerperal pyrexia, 129; cerebrospinal fever, 184; poliomyelitis, 7; polio-encephalitis, 0; encephalitis lethargica, 3; dysentery, 68; ophthalmia neonatorum, 99. No case of cholera, plague or typhus fever was notified during the week.

Of the 293 cases of paratyphoid 63 were reported from the county of Chester (Birkenhead 28, Bebington 16, Wallasey 14) and 146 from Lancaster (Liverpool 79, St. Helens 18, Manchester 15, Widnes 4, West Lancs 4); smaller aggregations from Staffs (Stoke 11, Stafford 6) and Northants (Brixton R.D. 4); remaining cases widely scattered.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on July 9 was 1412; including scarlet fever, 129; diphtheria, 261; measles, 158; whooping-cough, 517; enteritis, 16; chicken-pox, 47; erysipelas, 43; mumps, 8; poliomyelitis, 1; dysentery, 1; cerebrospinal fever, 37; puerperal sepsis, 8; enteric fevers, 17; german measles, 6; other diseases (non-infectious), 82; not yet diagnosed, 81.

Deaths.—In 126 great towns there were 3 (0) deaths from enteric fever, 3 (1) from scarlet fever, 26 (4) from whooping-cough, 8 (0) from measles, 21 (0) from diphtheria, 41 (3) from diarrhœa and enteritis under 2 years, and 6 (1) from influenza. The figures in parentheses are those for London itself.

Liverpool, Manchester and Nottingham each reported a fatal case of enteric fever. There were also 4 deaths from diphtheria at Liverpool.

The number of stillbirths notified during the week was 183 (corresponding to a rate of 36 per thousand total births), including 13 in London.

Obituary

JOHN DOUGLAS STANLEY

M.D. EDIN. AND BIRM., F.R.C.P.

Dr. Douglas Stanley, emeritus professor of pharmacology and therapeutics in the University of Birmingham, died at his home at Feckenham on July 5. He was a sound physician and an inspiring bedside teacher, who relied rather upon his own wide clinical experience than upon the written words of the textbooks. Sparing of words, he had a dry incisive wit which drove home with emphasis his points and made his lectures memorable.

Stanley came of an Ulster family, but began his education abroad, for his father was for some time chaplain at Antwerp, later settling as vicar at Oulton in Norfolk. After qualifying in medicine at Edinburgh in 1889, and holding resident appointments at the Royal Infirmary, he completed his studies at the London Hospital and at Lille where he was for a time interne at the hospital. In 1893 he went to Birmingham as resident pathologist at the General Hospital and demonstrator in morbid anatomy at the University, and all his life his medicine was founded on a close study of these subjects. Some three years later he joined the honorary staff at the Queen's Hospital and the Children's Hospital, and became university lecturer in clinical medicine. On the death of Arthur Foxwell he was appointed to the chair of pharmacology and therapeutics. He was for some years editor of the *Birmingham Medical Review* and many of his papers there reflect his interest in the diagnosis of diseases of the lung. "D. S.," as he was affectionately called by all, carried his kindness and practical sense into his life outside medicine. His old patients and students knew him as a friend and after he retired from his hospitals he continued to serve them well as a member of their boards of management. The interests of the Hallam Hospital, West Bromwich, were very near to him and he continued to act as its consulting physician until his death.

Stanley retained throughout his life his love of French literature. He was a man of wide interests and varied hobbies, amongst which perhaps the chief was the collection of old furniture of which he had a sound knowledge aided by a fine practical craftsmanship in cabinet-making and woodwork. On his retirement into the country he parted with a portion of his collection in a sale which attracted considerable attention amongst connoisseurs. His Irish glass, china and a selection of illuminated MSS. attested his judgment in these antiquarian directions.

ROGER NEVILLE GOODMAN

B.SC. LOND., M.D. CAMB., D.P.H.

Dr. R. N. Goodman, who died at Oxford on July 9 after an operation, was for 42 years a general practitioner in Kingston-on-Thames, to the freedom of which royal borough he was admitted in 1929. For the last nine years he had been living in retirement at Great Kimble, near Aylesbury.

Lafayette

Roger Goodman was born in 1863, the son of Neville Goodman and Maria Cunliffe. His forbears were Nonconformist millers and farmers of the Cambridge marches. In his youth he sailed with his father round the world and up the Amazon collecting specimens. After taking a London science degree he went to Cambridge where he was a scholar of St. John's and took the first place in the natural sciences tripos but abandoned an academic career on the death of his father. Going on to the London Hospital he qualified in 1887 and held house appointments there and at Brompton. In 1890 he took over the practice of E. M. Shirtliff in Kingston, at first in partnership with A. M. Daldy, later with J. G. Owen, E. J. Woolley and H. R. Davies, a combination which represented four different London hospitals. Almost from the start he was associated with local education; he was a member of the borough and county education committees and on the governing body of the Tiffin School and of the Grammar School, founded in 1305 by Edward Lovekyn whose chantry he was helpful in preserving, obtaining for both the playing fields they needed. During the last war he acted as hon. anæsthetist to the Epsom War Hospital and later was president of the Surrey branch of the B.M.A.

"To an undergraduate visiting Dr. Goodman's home for the first time twenty years ago," writes T. F., "he was a little alarming. After dinner, at which he took nothing but milk pudding, we would sit in his consulting-room, surrounded by piles of new books. I confessed that I wanted to be a writer. 'But hadn't you better *know* about something before you write?' he asked. And when he saw my drawings he remarked that I seemed to have drawn first and decided on the subject afterwards. Such forthright comment cannot always have pleased patients, colleagues and fellow-townsmen; but all were wise to profit by his intelligence and knowledge. He was serious-minded: he did not need the flippancy or the sentiment that others use to bypass facts. His purpose, indeed, was never escape: he was honest, his feet were squarely on the ground, and the patient was as safe in his hands as anyone can hope to be. To those who recognised a brain and character far above the average of the profession it seemed that he should have had more important work to do; but perhaps his work was as important as any."

At the age of 70 Dr. Goodman retired to a house at the foot of the Chilterns, retaining and refreshing tastes that made retirement a happy change of occupations. Here he was the shrewd and friendly neighbour, the observer of rare plants in the hedgerows and of the migrating of toads and glow-worms, the student of social and economic movements, and when the crisis came it found him dropping naturally into responsible offices. He became a member of the county food control, he was responsible for keeping the register for the medical war committee, and he was the warden to whom everyone turned for help. He even started growing belladonna in his field. In his reply to those who conferred on him the civic freedom ten years earlier he suggested as his epitaph "He did not know—but he was willing to learn." And it was given to him in large measure to learn to know his fellow men, so that his life was increasingly of service to them.

Dr. Goodman was twice married, first to Louise Harvey Marriott, matron of Surbiton cottage hospital, who died in 1931; and then to Emily Green Horner, who survives him. Dr. Neville Marriott Goodman, only child of the former marriage, is a deputy senior medical officer of the Ministry of Health.

CHRISTOPHER ROWLAND ALDERSON

M.C., M.R.C.S.; MAJOR, R.A.M.C.

Dr. C. R. Alderson died in a prison camp on March 20. Born in Bradford in 1893 he joined the Liverpool Scottish in 1913, transferring to the Royal Engineers two years later, and in 1916 he was awarded the military medal. He received a commission in 1917 and after the Armistice he saw further service in North Russia and was awarded the military cross. After demobilisation in 1920 he studied medicine at University College Hospital, qualifying in 1925. He held house-appointments at the Seamen's Hospital, Greenwich, and the Prince of Wales' Hospital, Tottenham, before he settled down in practice at Eastbourne, also acting as assistant anæsthetist to the Ear, Nose and Throat Hospital there. He was recommissioned as a major in the R.A.M.C. (T.A.) in April, 1939, and was reported missing on June 19 of the following year.

Surgeon Lieutenant D. A. PROTHERO, whose death is announced, qualified in 1935 and took the diploma in anæsthetics of the Royal Colleges two years later. Just before the outbreak of war he applied for a short-service commission in the Royal Navy. A shipmate who served with him for over a year until the time of his death writes:

"I had many opportunities of appreciating David Prothero's skill and clinical acumen and the abundant good nature which endeared him to us all. His post-graduate work had given him a firm grasp on his work, and we came to rely upon his abilities."

RICHARD FOWLER WARD

M.B. LOND., F.R.C.S.E.; MAJOR, R.A.M.C.

THE death of Major Richard Ward from enemy action was reported in an Army casualty list on June 11. He was born in 1902, the son of Dr. Frank Fowler Ward of Ipswich. He qualified M.R.C.S. from the London Hospital in 1926 and took his M.B. Lond. the following year. After serving as casualty officer and house-surgeon at the East Suffolk Hospital and as senior house-surgeon at the Derbyshire Royal Infirmary, he joined his father in practice in Ipswich and helped him unofficially at the East Suffolk Hospital where Dr. Fowler Ward had charge of the V.D. and urogenital clinics. During this period Richard went regularly to London where he did post-graduate work at St. Peter's Hospital with a view to specialising in urogenital surgery. On his father's retirement he succeeded him in his appointments at the East Suffolk. He quickly gained for himself, among his colleagues, a reputation as a diagnostician and operator, and a member of the honorary staff has written: "Ward's work in his specialty was of a high order and he was developing the same proficiency in general surgery. A loyal and pleasant colleague his outstanding qualities to my mind were an intellectual sincerity which made him speak his mind without fear or favour, and a deep devotion to duty." On the reorganisation of the medical staff of the hospital some two years ago he gave up general practice and was elected an assistant general surgeon.

Since 1929 Ward had been battalion medical officer of the 4th Suffolks and shortly after the outbreak of war he was mobilised and went to France with a general hospital returning from Boulogne last summer with his unit. He was a member of the town council at the time of his death.

He leaves a widow and two young children.

Medical News

University of Edinburgh

At a graduation on July 16 the address to the new graduates was delivered by Prof. D. K. Henderson. The following degrees and diplomas were conferred:—

M.D.—* D. S. Fairweather, J. A. Farfor, ‡ C. A. Green, ‡ David Harley, A. G. MacGillivray, * Hugh Miller, Andrew Paterson, A. I. Ross, † W. S. Thomson.

* Commended. † Highly commended. ‡ Awarded gold medal.

Ph.D.—A. E. Sundareson, M.B.

M.B., Ch.B.—P. A. Adam, R. S. F. Adam, W. J. Aitken, F. G. Alexander, W. G. Alexander, Alexander Anderson, William Anderson, Winifred A. Bailey, Helen S. Barrett, Konrad Bazarnik (Polish School of Medicine), C. L. Bikitsha, E. C. B. Bramwell, A. S. Brown, I. G. Brown, J. B. Brown, M. L. Brown, Robert Brown, Patrick Bruce Lockhart, Maud L. Buchanan, G. M. Carstairs, Josephine A. Cartwright, T. M. Chalmers, Edith M. Churchward, A. E. Claireaux, J. R. Clark, L. E. S. Coghlan, O. C. Colt, J. F. Cowan, J. D. Crombie, Rosina G. Dabb, A. B. da Costa, W. J. E. Darling, Esther A. Davidson, F. B. Davidson, Jacob Davidson, J. A. Deuchars, H. S. Dewar, J. S. Drummond, J. W. Drummond, A. D. Drysdale, E. C. Eadie, Ethel F. Edwards, A. W. G. Elliott, Esther T. Ewing, E. C. Field, D. E. P. Forbes, W. R. Fyvie, T. M. Galloway, Michael Gandz, J. A. L. Gilbert (in absentia), I. C. Godfrey, J. M. Gold, I. W. B. Grant, Marie P. S. Grant, A. A. Guild, D. S. Harling, Elizabeth G. Harris, K. W. Horn, Henry Hutchison, Katherine I. Izat, Douglas Jaboor, P. M. Kerr, A. M. Langwill, *J. R. Lauckner, John Lawson, Philippa M. Ludlam, J. M. M'Alpin, John M'Clement, R. N. C. M'Curdy, H. M. T. MacDonald, J. A. Macfarlane, R. C. M'Laren, I. M. MacLeod, G. C. Malloch, K. L. Marks, Margaret St. C. Masson, Ellis M. Matthew, F. G. Maxwell-Smith, J. C. G. Mercer, A. M. Merriweather, Grace M. Mitchell, R. C. E. Moffat, *A. G. C. Neill, D. F. Nicholson, John Orr, C. A. Palfrey, R. B. Parker, W. H. Parkinson, J. M'D. Paterson, M. G. Pearson, H. J. Powell, J. W. T. Pretsell, Thomas Primrose, V. T. Pugh, B. C. E. Richardson, M. R. Rifaat, Winifred B. Ritchie, W. G. Robertson, H. E. Robins, H. N. Robson, J. D. Ross, *J. Y. W. Russell, A. J. Sangster, *Sheila P. V. Sherlock, O. H. Slung, Betty V. Slesser, J. D. A. M. Smart, A. C. Smith, C. J. C. Smith, Margaret S. Smith, Margaret S. Smith, J. C. W. Somerville, J. J. Stevenson, N. R. Stewart, J. R. Stuart, A. P. Tait, Helena C. M'I. Taylor, Mildred S. Tie-Ten-Quee, Theodore Tie-Ten-Quee, J. E. Tiane, W. H. Toms, Janet C. Trotter, Davina M. van Weel, J. W. Walford, Margaret J. P. Walker, Grizel Warnock, Elizabeth M. Watson, W. B. Whiston, J. G. Whitty, John Wilkinson, Jean C. Willison, J. A. C. Wilson, Sara S. Wood, H. C. Worrall, Kathleen M. F. Worrall, R. K. W. Yang, and W. W. Yellowlees.

* With honours.

B.Sc.—O. H. Slung, M.B.

D.P.H.—Olive B. Barnetson, † G. A. R. Brown, † W. D. Buchanan, †John Cameron, M. de S. Craig, †William Giles, Rachel Hunter, † R. P. Seymour, †Mora A. Smeaton and Mona M. M'F. Thomson.

D.M.R.—† Kenneth Brauer, † Brian Donnelly, G. H. Illingworth, and † J. A. Wain.

† In absentia.

Scottish Conjoint Board

The following have passed the final examination and on July 18 were admitted licentiates of the Royal Colleges of Physicians and Surgeons of Edinburgh, and of the Royal Faculty of Physicians and Surgeons of Glasgow:—

N. V. Appavoo, H. K. Banda, F. H. Batchellor, S. J. Blau, A. H. Brambir, William Brown, Mortimer Burdman, David Davidson, W. J. Dempster, H. H. Feldman, W. J. E. Fernando, John Fitzsimons, Samuel Gelband, E. G. Gordon, H. P. Hall, H. V. Hankins, A. S. B. Hebron, M. H. Hurwitz, James Ireland, Louis Kaywin, Herman Laret, Morris Links, Emanuel Lipschik, Mary K. McCabe, Alistair McCall, Thomas McMurray, J. C. MacWilliam, Irving Markowitz, Herbert Pearl, J. M. Stewart and L. J. Swirsky.

Edmund Nobel, M.D. Vienna, was also admitted licentiate.

Royal College of Nursing.

The Minister of Health has informed the college that he contemplates setting up machinery for the consideration of nurses' salaries, and that nurses, hospitals and local authorities will be consulted before he comes to any decision on the matter. It is understood that he has in mind a modified form of Burnham scale on the lines suggested by the interdepartmental committee. The college, however, maintains that machinery dealing only with the salaries of nurses would be inadequate.

Specialists for the R.A.M.C.

The Central Medical War Committee is asked from time to time to nominate specialists as lieut.-colonels in charge of medical or surgical divisions. Any specialist in medicine or surgery who wishes to have his name considered for a post of this kind should communicate at once with the secretary of the committee, B.M.A. House, Tavistock Square, London, W.C.1.

Service Award

The D.S.O. has been awarded to Major F. McL. Richardson, M.D. Edin., R.A.M.C., for gallant and distinguished services in the Middle East.

Prisoners of War

In a recent casualty list the following R.A.M.C. officers were posted as prisoners of war: W. S./Captain H. A. Barker, M.B., Captain A. R. Darlow, M.R.C.S., Lieutenant J. A. S. Mulligan, M.B. Belf.

National Council for Mental Hygiene

The council is holding a public meeting at 26 Portland Place, London, W.1, on Thursday, July 31, at 5 P.M., when Mr. Kenneth Walker will speak on the need for a positive philosophy of life.

Extra Cheese for Vegetarian Diabetics

On the recommendation of the food rationing (special diets) advisory committee of the Medical Research Council vegetarian diabetics are to receive an extra weekly allowance of 8 oz. of cheese in addition to the special ration of 8 oz. allocated to vegetarians.

Caldecote Hall, Nuneaton, which was taken over by the Ministry of Health last year and later relinquished, has now resumed its normal work of treating neurasthenia and addictions.

The Dr. Jessie Macgregor prize for 1938–41 has been awarded to Dr. Agnes Macgregor for her work on pneumonia in the newborn.

Notes, Comments and Abstracts

HEALTH OF PALESTINE

THE report for 1939 of the Department of Health of Palestine is more comprehensive than might be expected in these disturbed times. Its chief interest lies in the comparison of the health of the three chief races: Jews, Arabs and Christians, for the health services are in essence similar for all. The results, however, do not tell us of differences in health due to true racial causes (though they appear to do so), but of the uses made of the health services and of how far this use is influenced by prejudice, energy and obstruction. The cost of the services was 3·9% of the total estimated government expenditure. Unfortunately 1939 was much disturbed by political strife which prevented developments of health work, but in spite of this the health of the population was remarkably good and there were no important epidemics. The recorded incidence of infectious diseases was the lowest for many years, and the death-rate from them half that of 1931. The total population was 1,501,698—roughly 60% Moslems, 30% Jews and 10% Christians and others. The birth-rate was twice as high in the Moslems (46·4) as in the Jews (23·0). Both rates are falling, that of the Jews more rapidly than that of the Moslems. The death-rate of the Moslems is much more than double that of the Jews. In 1939 the respective rates were 17·4 and 7·6. Here again both rates are falling, but that of the Moslems more rapidly. Infantile mortality was 121·5 per 1000 live births among the Moslems and 54 among the Jews; in Christians the rate was 101. These rates are the lowest ever recorded and show a sharp decline from previous years.

In the 29 main towns there were 7799 deaths, of which all but 671 could be classified. There were 66 suicides, 344 homicides and 290 deaths from other violence. The numbers of homicides and suicides are exceptional: before 1938, when troubles became serious, the rates were comparatively low. Diarrhœa caused 1336 and pneumonia 1258 deaths; then, in order, come heart diseases 617, cancer 364, cerebral hæmorrhage 311, and nephritis 276. The reported incidence of malaria was 3394 cases with 15 deaths; of typhoid 1235 cases with 134 deaths; of paratyphoid 175 cases with 2 deaths. Tuberculosis gave 461 cases with 207 deaths, which seems hardly credible. In this connexion we are told that the population in general has not been exposed to tuberculosis as much as most civilised communities, and that a progressive increase in morbidity and mortality may be anticipated unless proper prevention and control measures are instituted. It is satisfactory to note that there has been no increase in tuberculosis in the past ten years. A survey carried out in 1934 included Mantoux testing of 18,737 Arab children, and 15% gave positive responses. A more recent test returned 13·6% positive. Ophthalmias are a formidable problem in Palestine, for trachoma is widespread, epidemics of acute conjunctivitis (Koch-Weeks) are perennial and gonorrhœal ophthalmia apparently common. In a population of 304,532, blindness in one eye was found in 8534 (present in 47 from birth) and total blindness in 3462 (present in 78 from birth).

MEDICINE UNDER TOTALITARIANISM

MOST people now realise the unhappy position of the arts in the countries where, under a totalitarian regime, all human enterprise must be harnessed to the cart of the state (or dragged unwillingly at the cart's tail). In Italy, at any rate, medicine is in the same uncomfortable situation, judging by a contribution to *L'attualita medica* (1940, **5**, 198) which has somehow succeeded in reaching this country. In this article, which is called "How to spread Italian culture," L. Verney remarks in language recalling the old-fashioned religious tract that "we must strain every nerve to make Italy a cultural lighthouse, diffusing abroad the spirit of latinity"; and this "not for sentimental reasons, but because of the resulting repercussions in the political and economic spheres." He complains that there is a lamentable neglect in foreign countries of Italy's contribution to medical knowledge; as he looks through the review columns of foreign periodicals he scarcely ever finds a review of an Italian book. "It seems," he argues, "that our publishers do not think of sending books abroad for review; otherwise this silence is inexplicable." There may, in fact, be another explanation. Other measures are advocated, such as the establishment in foreign countries of depots for the sale of Italian books and periodicals; translation of Italian literature into other languages; exchange of research workers and students with other countries. "Cultural propaganda must reach the level of the new Italy. It must become worthy of our new destiny." Verney seems to feel no doubt that the offspring of the marriage between medicine and the state will be received with enthusiasm by the inhabitants of less enlightened countries. The war rather restricts the range of the activities he advocates, but his plans are presumably part of the New Order which is to issue from a German-Italian victory.

STILL'S VERSES

THE small volume "Childhood and other Poems" (John Murray, pp. 152, 5*s*.), by the late Sir Frederick Still, recalls the old Greek epigram, so brilliantly translated by Cory, another lover of children.

> They told me, Heraclitus, they told me you were dead, . . .
>
> Still are thy pleasant voices, thy nightingales, awake;
> For Death, he taketh all away, but them he cannot take.

"Pleasant voices" almost exactly describes the character of these verses, for they are rather the exercises of an accomplished and scholarly mind than the inspired effusions of a poet. They will be treasured by all who knew their author, but can scarcely make a wider appeal to the lover of poetry, for with all their felicity of language, and polished and careful art, they lack the fire and ardour of original thought.

Births, Marriages and Deaths

BIRTHS

HAWKINS.—On July 15, at Oxford, the wife of Captain G. F. C. Hawkins, R.A.M.C.—a son.

RITCHIE.—On July 15, at Greenock, the wife of Surgeon Lieut.-Commander T. H. W. Ritchie, R.N.V.R., of Sanderstead, Surrey—a son.

MARRIAGES

ALLEN—FOXTON.—On July 12, at Buckland Newton, Dorset, Michael George Allen, M.R.C.S., to Aileen Foxton.

BATTLE—KING.—On July 5, at Aylesbury, Richard John Vulliamy Battle, F.R.C.S., to Jessie Margaret King.

BURNEY—HUMPHRIES.—On July 14, in London, Dudley Burney, M.R.C.S., to Dione Humphries.

GILLESPIE—WEST.—On July 12, at Caversham, Ernest Harper Gillespie, M.B., to Margery Bridget West.

HARPER—POCOCK.—On July 12, at Limpsfield, Ernest Harold Carr Harper, F.R.C.S., major R.A.M.C., to Barbara Pocock.

LANCE—MEREDITH.—On July 18, in London, Norman Du Pre Lance, M.R.C.S., lieutenant R.A.M.C., to Maureen Meredith.

ROBERTSON—BLEICHROEDER.—On July 19, at Kingston, John Albert Robertson, M.B., captain R.A.M.C., to Beate Bleichroeder.

DEATHS

HANNA.—On July 13, William Hanna, M.D. Belf., D.P.H., of Claughton, Birkenhead.

HAWKINS.—On July 12, at East Grinstead, Arthur Hawkins, B.A. Camb., M.R.C.S., late of Bedford, and Eastbourne.

MORE.—On July 19, in London, Lancelot Paxton More, M.B. Edin., colonel, late R.A.M.C.

MORRIS.—On July 6, in Boscombe, Arthur Hugh Morris, C.I.E., C.B.E., M.R.C.S., D.P.H., colonel, late R.A.M.C., aged 69.

Appointments

BLISS, THEODORE, M.R.C.S.: R.S.O. at Royal South Hants and Southampton Hospital.

COWAN, H. A., F.R.C.S.E., D.L.O.: temp. ear, nose and throat surgeon to the Essex County Hospital, Colchester.

DALEY, M. DOREEN, M.B. Lond.: resident asst. in obstetrics at the British Postgraduate Medical School, London.

GISSANE, WILLIAM, M.B. Sydney, F.R.C.S.: clinical director of the Birmingham Rehabilitation Centre and Accident Hospital.

HENDERSON, EDWIN, M.B. Belf., F.R.C.S.E.: deputy medical superintendent at Boundary Park General Hospital, Oldham.

MEADOWS, S. P., M.D. Lond., F.R.C.P.: temp. asst. physician to Hereford County Hospital.

•PARKER, J. N., M.B. Manc., D.P.H.: deputy medical superintendent at Baguley Sanatorium, nr. Manchester.

• Subject to confirmation.

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References: Lancet, *November 16th, 1940, page 621.* B.M.J. *November 16th, 1940, page 679.*

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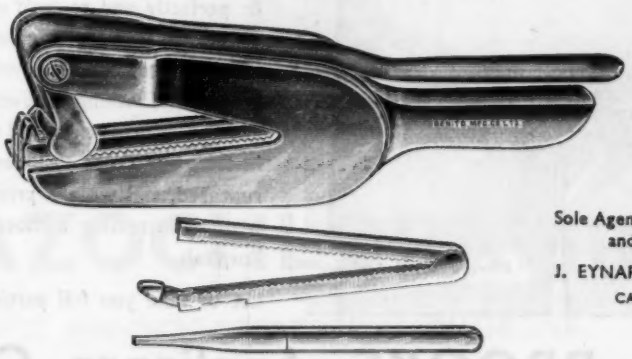

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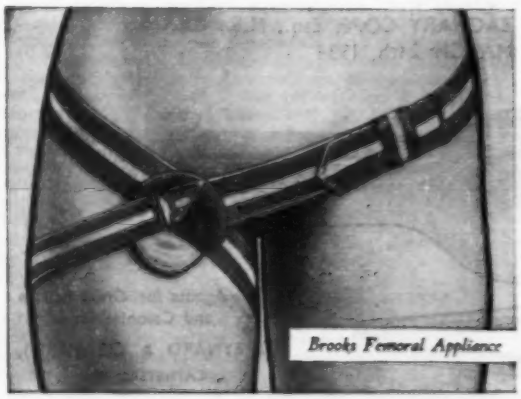

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Specially built and licensed for the care and treatment of a limited number of Ladies and Gentlemen suffering from NERVOUS and MENTAL breakdown. Voluntary and certified patients received. Ladies also admitted as Temporary Patients without certification. Terms moderate. *Apply*, RESIDENT PHYSICIAN, who may be seen in Liverpool, by appointment. *Tel. No. 8 Formby*

CALDECOTE HALL

NUNEATON
WARWICKSHIRE
('Phone: Nuneaton 241)

Residential treatment of

"Nervous Disorders" & Alcoholism

(Certifiable cases are not received)

This beautiful mansion situated in the heart of the country (less than two hours from London by L.M.S.R.) and surrounded by charming pleasure grounds in which games and outdoor occupational therapy are available is devoted to the treatment of Alcoholism and "Nerves" by psychotherapeutic and ancillary methods.

Illustrated Brochure and particulars obtainable from A. E. CARVER, M.D., D.P.M., Resident Medical Superintendent.

TOR-NA-DEE SANATORIUM

Managing Director:
DAVID LAWSON, M.D., F.R.S.E.

FOR THE TREATMENT OF PULMONARY TUBERCULOSIS AND ALLIED DISEASES

Medical Superintendent: R. Y. KEERS, M.D.(Edin.)

For prospectus apply to The Secretary, Tor-na-Dee, Murtle, Aberdeenshire Telephone: Cults 107

PECKHAM HOUSE, 112, Peckham Road, London, S.E.15

Telegrams: "Alleviated, London" Telephone: Rodney 2641-2642

A Private Mental Hospital, for Ladies and Gentlemen suffering from Nervous and Mental Illness, where the amenities of a comfortable home are combined with full investigation and every well-established modern treatment.

Terms from 3½ guineas weekly.

Illustrated Prospectus may be obtained from the Physician Superintendent.

CRICHTON ROYAL, DUMFRIES

For NERVOUS AND MENTAL DISORDERS

Separate Villa for patients suffering from the effects of alcoholism and drug addiction. Every facility for complete investigation and individual treatment on the most modern lines. Fully equipped gymnasium, golf course, and indoor swimming pool. Specially trained occupational and recreational therapists. **Special Department for Insulin Therapy.** As the hospital is well endowed terms are exceptionally moderate, e.g., First Department from 3 guineas per week, Second Department, 2 and 2½ guineas per week. Voluntary and certified patients are received. Medical Certificates given anywhere in the British Isles are valid for admission of patients. *For prospectus, necessary forms, and further information apply to:—*

Physician Superintendent, P. K. McCowan, J.P., M.D., F.R.C.P., D.P.M., Barrister-at-Law. Tel. Dumfries 1119

ST. ANDREW'S HOSPITAL

FOR NERVOUS AND MENTAL DISORDERS,

NORTHAMPTON

FOR THE UPPER AND MIDDLE CLASSES ONLY.

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., M.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, bio-chemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombieres treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-Ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

CHEADLE ROYAL HOSPITAL, Cheadle, Cheshire.

This REGISTERED HOSPITAL, with a SEASIDE BRANCH at Colwyn Bay, N. Wales, is for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL AND NERVOUS DISEASES.

The Hospital is governed by a COMMITTEE, appointed by the TRUSTEES of the Manchester Royal Infirmary.

In addition to the Main Buildings there are separate villas. Extensive grounds. Hard and grass tennis courts, cricket and croquet grounds, and a court for badminton. There are also wireless installations. Golf may be had within easy distance. Occupational Therapy.

VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS received.

The Hospital is nine miles from Manchester, 50 minutes by rail from Liverpool, and 3½ hours from London.

For terms and further particulars apply to the Medical Superintendent, who may be seen in Manchester BY APPOINTMENT. *Telephone: Gatley* 2231 (3 lines).

CAMBERWELL HOUSE

Telegrams: "PSYCHOLIA, LONDON." 33, PECKHAM RD., LONDON, S.E.5. Telephone: Rodney 4242 (2 lines).

For the treatment of MENTAL DISORDERS.

Also completely detached Villas for Mild Cases, with private suites if desired. Voluntary Patients received. Twenty acres of Grounds. Hard and Grass Tennis Courts, Putting Greens, Bowls, Croquet, Squash Rackets, Recreation Hall with Badminton Court, and all indoor amusements, including Wireless and other Concerts, Occupational Therapy, Calisthenics, and Dancing Classes. X-ray and Actino-therapy, Prolonged Immersion Baths, Operating Theatre, Pathological Laboratory, Dental Surgery, and Ophthalmic Department. Chapel. **Shock and also modified Insulin Therapy.**

Senior Physician: Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff, and visiting Consultants.

An Illustrated Prospectus, giving fees which are strictly moderate, may be obtained upon application to the Secretary.

The Convalescent Branch is Hove Villa, Brighton, and is 200 feet above sea level.

THE COTSWOLD SANATORIUM

First opened in 1898 and rebuilt in 1935 on the Cotswold Hills seven miles from Cheltenham, for the Treatment of Pulmonary and all other forms of Tuberculosis. Aspect S.S.W., sheltered from North and East, elevation 800 feet. Pure bracing air, SPECIAL TREATMENT by artificial PNEUMOTHORAX (X-ray controlled). TUBERCULINS, and ULTRA-VIOLET RAYS is available when necessary without extra charge. X-RAY plant, Fully Equipped Dental Department, Electric Light Radiators, hot and cold basins and Wireless in all rooms. Up-to-date drainage. Full day & night Nursing Staff. Terms: 5½ to 9½ Guineas a week inclusive.

Med. Supt.: GEOFFREY A. HOFFMAN, B.A., M.B., T.C. Dub. *Asst. Phys.:* MARGARET A. HARRISON, M.B., B.S. Lond. *Cons. Laryngologist:* G. N. BARKER, F.R.C.S. Edin., D.L.O. *Cons. Dent. Surgeon:* GEORGE V. SAUNDERS, L.D.S.R.C.S. Lond. *Phone:* 31 & 83 Witcombe. Apply: *The Secretary, The Cotswold Sanatorium, Cranham, Gloucester. Telegrams:* "Hoffman, Birdlip."

COURT HALL, KENTON, near EXETER

FOR THE TREATMENT OF EIGHT LADIES, VOLUNTARY, TEMPORARY AND CERTIFIED PATIENTS

CLIFFDEN, TEIGNMOUTH

FOR EARLY AND CONVALESCENT CASES Recreational Therapies are held daily by skilled Leaders

The house stands high with spacious balconies and extensive views of the South Devon Coast. Beautiful garden. Own Dairy in 25 acres. Private road to beach.

There is also a charming house, **EBWORTHY, MANATON, DARTMOOR,** situated in 20 acres, 1100 ft. up for bracing moorland air.

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P.

Telephones—STARCROSS 259 and TEIGNMOUTH 289

The Pioneer Hospital, opened 1796, for the humane treatment of those suffering from Nervous and Mental Disorder

THE RETREAT, YORK

This Hospital of 200 beds, administered by a Committee of the Society of Friends, combines what is best in the investigation and treatment of nervous illness with a sympathetic and friendly atmosphere. Last year 121 patients were admitted, of whom 80 were voluntary cases.

Much curative work is accomplished in our mental hospitals to-day and the recovery rate compares very favourably with that of our general hospitals.

For information and terms of admission apply to:—
The Physician Superintendent,
ARTHUR POOL, M.R.C.P.
(Telephone: York 3612)
who is available for consultation

THE OLD MANOR SALISBURY

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS.

Extensive grounds. Detached Villas. Chapel. Garden and Dairy Produce from own farm. Terms very moderate.
CONVALESCENT HOME AT BOURNEMOUTH Detached Villas standing in 12 acres of ornamental grounds, with tennis courts, etc., which Voluntary, Temporary or Certified Patients may visit by arrangement for long or short period.
Illustrated Brochure on application to the Medical Superintendent. The Old Manor, Salisbury. Telephone: Salisbury 3216 and 3217.

HAYDOCK LODGE,
NEWTON-LE-WILLOWS, LANCASHIRE.

For the reception and treatment of PRIVATE PATIENTS of both sexes of the UPPER AND MIDDLE CLASSES suffering from Mental and Nervous Disorders, Alcoholism and Drug addiction, either voluntarily, temporarily, or under certificate. Patients are classified in separate buildings according to their mental condition. Situated in park and grounds of 400 acres. Self-supported by its own farm and gardens in which patients are encouraged to occupy themselves. Every facility for indoor and outdoor recreation. For terms, prospectus, etc., apply MEDICAL SUPERINTENDENT. *'Phone:* Ashton-in-Makerfield 7311. *Tele. Address:* Street, Ashton-in-Makerfield.

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind.
Terms moderate. Apply to Resident Medical Superintendent. Telegrams: ADAM WEST MALLING. Telephone No. 2: MALLING.

STRETTON HOUSE,

Church Stretton, Shropshire.
ESTABLISHED IN 1853.

A PRIVATE HOME for the treatment of gentlemen suffering from Mental and Nervous illness, including the allied Disorders of Alcoholism and the Drug Habit. All types of early Mental and Nervous Cases are received without Certificates as Voluntary Patients under the provisions of the Mental Treatment Act, 1930. Bracing hill country. See "Medical Directory," p. 2358.—Apply to the Medical Superintendent. 'Phone 10 P.O., Church Stretton.

THE MAGHULL HOMES FOR EPILEPTICS (Inc.)

MAGHULL (near LIVERPOOL)

FARMING and OPEN AIR OCCUPATION for PATIENTS
A few vacancies in 1st and 2nd Class Houses.
FEES: 1st Class (men only) from £3 per week upwards. 2nd Class (men and women) £2/- per week.
For further particulars apply: **C. EDGAR GRISEWOOD, A.C.A., Secretary, 29, Exchange Street East, Liverpool, 2**

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental Illness. All forms of treatment available. Fees from 4 gns. per week upwards according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician.
Apply to Dr. J. A. SMALL. Telephone: Norwich 60.

SPRINGFIELD HOUSE

'Phone: BEDFORD 3417. **Near BEDFORD**
For Mental Cases with or without Certificates.
Ordinary Terms: Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).
For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.
INTERVIEWS IN LONDON BY APPOINTMENT.

FENSTANTON, at "FIVE DIAMONDS," Chalfont St. Giles, Bucks.

A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (*See Medical Directory*, p. 2346.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

NORTHUMBERLAND HOUSE

GREEN LANES,
FINSBURY PARK, N.4

A PRIVATE HOSPITAL for the treatment of mental and nervous illnesses. Conveniently situated and easy of access from all parts. Occupational Therapy, Psychotherapy, and other modern forms of treatment. A.R.P. Shelters.
Telephone: Stamford Hill 2688.
For further particulars apply to the MEDICAL SUPERINTENDENT.

CITY OF LONDON MENTAL HOSPITAL

Near DARTFORD, KENT.

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards.

CHISWICK HOUSE,

PINNER, MIDDLESEX.
Telephone: PINNER 234.

A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.
A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.
DOUGLAS MACAULAY, M.D., D.P.M.

PORTSMOUTH CITY MENTAL HOSPITAL

Accommodation is provided for the reception of PRIVATE PATIENTS of both sexes in three detached Villas, which are healthily and pleasantly situated in extensive grounds with sea views.

Charges from 3 guineas weekly, including all necessaries except clothing.—Apply to the Medical Superintendent and Resident Physician, THOMAS BEATON, O.B.E., M.D., F.R.C.P.

Royal Free Hospital,
Gray's Inn-road, W.C.1.

Applications are invited from medical Women for the post of CLINICAL ASSISTANT in the GYNÆCOLOGICAL DEPARTMENT on Wednesday mornings.

Applications should reach the undersigned not later than 9th August, 1941. RICHARD T. BARTLEY, Secretary.

Royal Free Hospital,
Gray's Inn-road, W.C.1.

Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1). Suitably qualified R practitioners holding B2 or B1 posts may apply. If the successful candidate is not remunerated by the Emergency Medical Service, he or she will be paid by the Hospital at the rate of £150 per annum.

Applications, stating age and accompanied by copies of three recent testimonials, should be sent to the undersigned (from whom all information may be obtained) on or before the 9th August. Duties to commence 1st September, 1941.

RICHARD T. BARTLEY, Secretary.

King Edward Memorial Hospital,
Mattock-lane, Ealing, W.13.

Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER AND HOUSE SURGEON (A), which includes duties in the Ear, Nose, and Throat, Dental, and Gynæcological Departments, vacant 14th August, 1941, including R practitioners within three months of qualification.

Appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of two recent testimonials, should be sent to the undersigned immediately.

R. A. MICKELWRIGHT, House Governor.

British Postgraduate Medical School.
(UNIVERSITY OF LONDON.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (A), including R practitioners within three months of qualification. The appointment is for six months from 1st September, and carries a salary of £105 per annum, plus the usual residential emoluments.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, should be sent not later than 5th August, 1941, to the DEAN, British Postgraduate Medical School, Ducane-road, London, W.12.

The Elizabeth Garrett Anderson
HOSPITAL, Euston-road, N.W.1.

Applications are invited for the post of Part-time PATHOLOGIST at a salary of £350 per annum. Duties to commence as soon as possible.

Applications, stating age, qualifications, and experience, with copies of recent testimonials, to be sent to the SECRETARY not later than 12th August.

The Prince of Wales's General
HOSPITAL, London, N.15.

APPOINTMENT OF CASUALTY OFFICERS (A).

Applications are invited from registered medical practitioners, Male, for the appointments of Casualty Officers (Two) (A), to become vacant on 1st August, including R practitioners within three months of qualification when the appointment will be for a period of six months. Salary is at the rate of £120 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should reach the undersigned as soon as possible.

J. C. BURDETT, Director and House Governor.

15th July, 1941.

Bolingbroke Hospital, Wandsworth
COMMON, S.W.11.

Applications are invited from registered medical practitioners (Male) for the appointment of HOUSE SURGEON (B2), including R practitioners who now hold A posts. The appointment will be for a period of six months commencing on 1st September. Salary is at the rate of £120 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned on or before the 13th August, 1941.

W. S. RANDOLPH BISS, Secretary-Superintendent.

South London Hospital for Women,
Clapham Common, S.W.4.

Applications are invited from medical Women for the appointment of RESIDENT MEDICAL OFFICER (B1) for a period of twelve months from 1st September.

Applicants should have held house appointments. Salary £200 per annum, with full residential emoluments.

Candidates are required to call on members of the Honorary Medical Staff, and applications, stating age, nationality, qualifications with dates, and accompanied by copies of three recent testimonials, must reach the SECRETARY at the Hospital by 18th August.

Resident Junior Assistant Medical
OFFICER (B2) required by MIDDLESEX COUNTY COUNCIL for HAREFIELD COUNTY SANATORIUM HOSPITAL, Harefield, Middlesex. Applications invited from registered medical practitioners who have held resident appointments in general hospital and also from R practitioners who now hold A posts. Salary £250 per annum. Board, lodging, and laundry. Whole-time duties, such as Council may direct, under supervision of Medical Superintendent. Appointment, subject to medical examination and one month's notice, is for six months with possibility of extension to twelve months (except in case of R practitioners). Post now vacant.

Applications, stating age, qualifications with dates, nationality, present post, and previous appointments, to the undersigned. No application forms provided. Relationship to any member or officer of the Council to be disclosed. Canvassing, directly or indirectly, will disqualify. Closing date 16th August, 1941.

C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

Resident Assistant Medical Officer
(ANÆSTHETIST) (B1) required by MIDDLESEX COUNTY COUNCIL for NORTH MIDDLESEX COUNTY HOSPITAL, Edmonton, N.18. Applicants must be registered medical practitioners (including suitably qualified R practitioners holding B2 or B1 posts) who have held resident appointments in general hospitals and had special experience in administering anæsthetics. Preference given to applicants holding the Diploma in Anæsthetics. Salary £400 by £25 to £475 per annum. Board, lodging, and laundry. Whole-time duties, under supervision of Medical Superintendent, will consist mainly in administering anæsthetics and such other duties as may be required. Appointment is for four years only, subject to medical examination and one month's notice.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, to the undersigned. Application forms not provided. Relationship to any member or officer of the Council to be disclosed. Copies of not more than three recent testimonials to be enclosed. Canvassing, directly or indirectly, will disqualify. Closing date 9th August, 1941.

C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

The Salvation Army,
THE MOTHERS' HOSPITAL,
Lower Clapton-road, Clapton, E.5.

Applications are invited from medical Women for the post of SENIOR RESIDENT MEDICAL OFFICER (B2), vacant middle of August, 1941. Salary £150 per annum, with board, residence, and laundry. The appointment is for six or twelve months.

Applications, with testimonials, must be sent to the Secretary not later than Saturday, 2nd August, 1941.

FRED HAMMOND, Secretary.

The Victoria Hospital for Children,
Tite-street, Chelsea, S.W.3.

APPOINTMENT OF RESIDENT MEDICAL OFFICER (B1).

Applications are invited from registered medical practitioners for the appointment of Resident Medical Officer to become vacant on 1st September. Applicants should have held a hospital appointment. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £200 per annum.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 6th August, 1941.

D. ST. JOHN BAMFORD, Secretary.

The Hospital for Sick Children,
Great Ormond-street, London, W.C.1.

Vacancies for a HOUSE PHYSICIAN (B2) and a HOUSE SURGEON (B2) will occur on the 1st October, 1941.

Applications are invited from registered medical practitioners, Male and Female, including R practitioners who hold A posts. The appointments are tenable for six months. The successful candidate must undertake to serve three of the six months at a Hospital in the Sector. Salaries at the rate of £100 per annum, with full residential emoluments.

Further particulars and forms of application, which must be returned not later than the 1st September, 1941, are obtainable from the undersigned.

HERBERT F. RUTHERFORD, Secretary.

July, 1941.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £600 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 29, Queen Anne's-gate, London, S.W.1.

University College Hospital Medical SCHOOL.

(UNIVERSITY OF LONDON.)

Applications are invited from registered medical practitioners for the appointment of FIRST ASSISTANT (B1 post) in the Obstetric Unit at University College Hospital Medical School, the appointment to commence as from 1st November, 1941. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding the diploma of F.R.C.S. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. The appointment is for a period of one year in the first instance, and the salary at the rate of £550 per annum, with superannuation benefits under the Federated Superannuation Scheme for Universities.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the SECRETARY, University College Hospital Medical School, University-street, W.C.1, not later than Tuesday, 5th August, 1941.

City of Lincoln.

CITY HOSPITAL AND SANATORIUM.

APPOINTMENT OF MALE RESIDENT MEDICAL OFFICER.

Applications are invited from Male registered medical practitioners for the appointment of Resident Medical Officer (B1) at the City Hospital and Sanatorium, for a period of twelve months. Single quarters only provided. Salary £300 per annum, plus war bonus, with board, residence, and laundry. Experience in the treatment of tuberculosis and infectious diseases desirable. Practitioners holding B1 or B2 posts are also invited to apply.

Forms of application and further particulars of appointment may be obtained from M. L. Bery, Medical Officer of Health, City Health Department, Beaumont Fee, Lincoln, and must be returned not later than 11th August, 1941.

G. H. BANWELL, Town Clerk.

Town Clerk's Office, Lincoln, 21st July, 1941.

Royal United Hospital, Bath.

RESIDENT APPOINTMENTS.

Applications are invited from registered medical practitioners, including R practitioners within three months of qualification, for the following A appointments, which become vacant on the dates stated :—

HOUSE SURGEON (Gynæcology, Obstetrics, and Anæsthetics), now vacant.

HOUSE SURGEON (General Surgery and Ear, Nose, and Throat), 1st September.

HOUSE SURGEON (General Surgery), 1st September.

Salaries at the rate of £150 per annum, with board, residence, and laundry. If held by R practitioners, appointments will be for a period of six months.

Applications (clearly indicating the post desired), stating age, qualifications, and experience, together with a copy of three testimonials, to be addressed to the undersigned immediately.

J. LAWRENCE MEARS, Secretary-Superintendent.

21st July, 1941.

East and West Suffolk County Councils.

ST. AUDRY'S HOSPITAL, MELTON, WOODBRIDGE, SUFFOLK.

TEMPORARY ASSISTANT MEDICAL OFFICER (B1).

Applications are invited from registered medical practitioners (Male) for the above post at St. Audry's Hospital, which is the County Mental Hospital and also a Class 1A Hospital with 100 Beds. Applicants should have held house appointments and had surgical experience. Salary seven guineas per week, with full residential emoluments.

Applications, with copies of two testimonials, should be sent to the MEDICAL SUPERINTENDENT as soon as possible.

County Borough of Oldham.

PUBLIC HEALTH AND MATERNITY AND CHILD WELFARE DEPARTMENTS.

Applications are invited from registered medical practitioners of either sex for the appointment of ASSISTANT MEDICAL OFFICER at a salary of £600 per annum, rising by annual increments of £25 to £700 per annum, plus war bonus which at present amounts to £24 per annum.

The duties will be almost entirely in connection with the Maternity and Child Welfare Service and will include attendance at the Ante-Natal and Children's Clinics. The Officer appointed will also be required to undertake duties in connection with the Ante-Natal Clinics and Maternity Service of the Municipal Hospital and the Municipal Midwifery Service.

Preference will be given to applicants who have had considerable experience in work with mothers and children, including six months' resident post at a Maternity Hospital and in a Children's Hospital.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination. The maximum age for new entrants to the Corporation service is 45 years. The person appointed will be required to reside within the borough.

The Officer appointed will not be allowed to engage in private practice or consulting practice, but will be required to devote the whole of his/her time to the duties of the Council.

Forms of application and conditions relating to appointments should be obtained from the Medical Officer of Health, Town Hall, Oldham, and returned to him, together with copies of not more than three recent testimonials, on or before the 20th August, 1941, endorsed "Assistant Medical Officer."

22nd July, 1941. THOMAS ALKER, Town Clerk.

North Staffordshire Royal Infirmary,

STOKE-ON-TRENT.

(Normally 472 Beds. Class 1A.)

Applications are invited from registered medical practitioners, Male and Female, including R practitioners within three months of qualification, for the post of CASUALTY OFFICER A.

The appointment will be for a period of six months. Salary at the rate of £150 per annum with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, should be sent to the undersigned as soon as possible.

THORNBURROW GIBSON, Secretary and House Governor.

Royal Hampshire County Hospital,

WINCHESTER. (461 Beds.)

Applications are invited from registered medical practitioners, including R practitioners within three months of qualification, for the appointment of HOUSE SURGEON (A). The appointment will be for a period of six months. Salary is at the rate of £175 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, hould be sent to the undersigned immediately.

H. EWART MITCHELL, Superintendent and Secretary.

Cornwall County Council.

CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST.

Applications are invited for the post of part-time Consultant Obstetrician and Gynæcologist. The remuneration offered is at the rate of £1000 per annum for a period of three years and at the rate of £600 per annum subsequently. Travelling expenses will be paid in accordance with the County Scale.

The Consultant appointed will be required to reside in the vicinity of Redruth, to attend in any part of the administrative county as required, but to associate himself particularly with the County Maternity Ward at the Camborne-Redruth Miners' and General Hospital. A more detailed list of duties can be obtained from the County Medical Officer upon application.

Applications, accompanied by not more than three recent testimonials, should be addressed to the County Medical Officer, County Hall, Truro, not later than Friday, 1st August, 1941.

E. T. VERGER, Acting Clerk of the County Council.

County of Warwick.

PUBLIC ASSISTANCE COMMITTEE.

The above Committee invite applications for the appointment of a Whole-time CONSULTING PHYSICIAN in connexion with their Hospital services and which is included in the Emergency Hospital Scheme of the Ministry of Health.

The person appointed will be required regularly to visit the several hospitals in the county under the Council's administration and will not be permitted to undertake private practice.

Applicants must be Fellows or Members of the Royal College of Physicians.

The salary of the office will be at the rate of £1200 per annum, rising by annual increments of £50 to £1400 per annum, and travelling allowances will be payable in accordance with the Council's scale. The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937.

Applications, stating age, qualifications, and experience, together with copies of three recent testimonials, should be sent to the Public Assistance Officer, Shire Hall, Warwick, not later than Wednesday, the 30th July, 1941.

L. EDGAR STEPHENS, Clerk of the Council.

Shire Hall, Warwick, 11th July, 1941.

Warwickshire and Coventry Joint

COMMITTEE FOR TUBERCULOSIS.

KING EDWARD VII MEMORIAL SANATORIUM, HERTFORD HILL, Near WARWICK.

APPOINTMENT OF JUNIOR ASSISTANT MEDICAL OFFICER (R and B2).

Applications are invited from registered medical Women practitioners (R and B2 groups) for the appointment of Junior Assistant Medical Officer at the above Sanatorium. The appointment will be for six months and may be renewed in the case of B2 practitioners for a further period of six months. The salary is at the rate of £250 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the Medical Superintendent, King Edward VII Memorial Sanatorium, Hertford Hill, near Warwick, not later than 31st July, 1941.

L. EDGAR STEPHENS, Clerk to the Joint Committee.

Shire Hall, Warwick, 11th July, 1941.

Royal Gwent Hospital, Newport, Mon.

Applications are invited from registered medical practitioners with previous experience in fractures and orthopædics, Male or Female, for the appointment of HOUSE SURGEON to the FRACTURE AND ORTHOPÆDIC DEPARTMENT (B2) now vacant, including R practitioners who now hold A posts. If held by an R practitioner the appointment will be limited to six months.

The salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned at once.

ALAN RUDDLE, Secretary-Superintendent.

11th July, 1941.

The Prince of Wales's Hospital,

GREENBANK ROAD, PLYMOUTH.

Applications are invited from registered medical practitioners for the appointment of a HOUSE PHYSICIAN (A) to become vacant on 10th September, including R practitioners, within three months of qualification. If held by an R practitioner, appointment will be for a period of six months. Salary is at the rate of £132 per annum, with full residential emoluments.

Applications, stating age, qualifications, with dates and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 31st July.

ARTHUR R. CASH, General Superintendent.

Huddersfield Royal Infirmary.

(321 Beds.)

Male HOUSE SURGEON (an A appointment) required to be attached to the Abnormal Maternity Department. Post vacant 31st July. Duties include the administration of anæsthetics. Salary will be at the rate of £150 per annum, with board, residence, and laundry.

Appointment for six months, subject to renewal for a similar period. If held by an R practitioner the appointment will be limited to six months.

R practitioners within three months of qualification may apply.

Applications, with copies of three recent testimonials, to be addressed to the undersigned.

H. J. JOHNSON, General Superintendent and Secretary.

Grimsby and District Hospital.

APPOINTMENT OF RESIDENT CASUALTY OFFICER (B2).

Applications are invited from registered medical practitioners, including R practitioners who hold A posts, for the appointment of Resident Casualty Officer (B2) vacant on June 30th, 1941. If held by an R practitioner the appointment is limited to six months. Salary is at the rate of £175 per annum, with residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by three recent testimonials, should be sent to the undersigned at once.

July 21st, 1941. H. B. COATES, Secretary-Superintendent.

Royal Manchester Children's Hospital,

PENDLEBURY.

Applications are invited from registered medical practitioners, Male and Female (including R practitioners within three months of qualification), for the post of ASSISTANT MEDICAL OFFICER (A) at the OUT-PATIENTS' DEPARTMENT, Gartside-street, Manchester, to become vacant on 1st September next. The appointment will be for a period of six months, and the salary is at the rate of £150 per annum. The hours of duty at the Out-patients' Department are from 9 A.M. until 1 P.M., or until the work of the department is finished. Preference will be given to candidates able to take up residence at the Hospital, Pendlebury, for evening relief duties.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than Friday, 1st August, 1941.

By Order,

H. HEARDMAN, General Superintendent and Secretary.

Royal Manchester Children's Hospital,

PENDLEBURY, Near MANCHESTER.

RESIDENT MEDICAL OFFICER (B1 APPOINTMENT).

Applications are invited for the post of Resident Medical Officer. Salary £150 per annum. The appointment is for a period of six months commencing 1st September, 1941. Candidates must be unmarried. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply.

Applications, stating age and accompanied by copies of not more than three recent testimonials, to be sent to the undersigned not later than Friday, 1st August. Canvassing, directly or indirectly, may disqualify.

By Order,

H. HEARDMAN, General Superintendent and Secretary.

Royal Manchester Children's Hospital,

PENDLEBURY.

Applications are invited from registered medical practitioners, Male and Female (including R practitioners within three months of qualification), for the appointment of HOUSE SURGEON (A) to become vacant on 1st September. The appointment is for a period of six months, and the salary is at the rate of £100 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, to be sent to the undersigned not later than Friday, 1st August, 1941. By Order,

H. HEARDMAN, General Superintendent and Secretary.

Essex County Council.

OLDCHURCH COUNTY HOSPITAL, ROMFORD.

The County Council of the Administrative County of Essex invite applications for the following appointments at the above Hospital:—

(1) TEMPORARY CONSULTANT PHYSICIAN with special knowledge of nervous diseases to undertake one session per week at a salary at the rate of £200 per annum. First-class railway fare or car mileage in accordance with the Council's scale will be paid.

(2) Whole-time SENIOR PHYSICIAN at a salary of £750 per annum, rising, subject to satisfactory service, by annual increments of £50 to £1000 per annum.

Forms of application and further particulars of the appointments may be obtained from the undersigned.

Applications, accompanied by copies of not more than three recent testimonials (which will not be returned), should be enclosed in an endorsed envelope addressed to me and delivered at the County Hall, Chelmsford, not later than 10 A.M. on Wednesday, the 6th day of August, 1941.

JOHN E. LIGHTBURN, Clerk of the County Council.

County Hall, Chelmsford, 9th July, 1941.

General Hospital, Nottingham.

(501 Beds.)

Applications are invited from registered medical practitioners (Male or Female), including R practitioners within three months of qualification, for the appointment of a HOUSE PHYSICIAN (A) for the above Hospital. The appointment is for six months. Duties to commence on or about 24th July. Salary at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and copies of testimonials, should be sent to the undersigned.

HENRY M. STANLEY, House Governor and Secretary.

Rochdale Infirmary and Dispensary.

LANCS. (110 Beds.)

APPOINTMENT OF HOUSE SURGEON (A).

The Board of Management invites applications for the appointment of House Surgeon (A), appointment now vacant, including R practitioners within three months of qualification. If held by an R practitioner, appointment will be for a period of six months. Salary attached to the appointment is at the rate of £150 per annum, including board, residence, and laundry.

Applications, stating age, nationality, &c., together with copies of three recent testimonials, to be sent to the Secretary.

The successful candidate must be a member of a medical defence society. W. WYNNE, Secretary.

Infirmary Office, Rochdale.

City and County of Newcastle upon TYNE.

NEWCASTLE GENERAL HOSPITAL. (900 Beds.)
SHOTLEY BRIDGE HOSPITAL. (800 Beds.)

(1) APPOINTMENT OF HOUSE PHYSICIANS (A) AND HOUSE SURGEONS (A).
(2) APPOINTMENT OF SPECIAL HOUSE SURGEON (A) TO THE NEUROSURGICAL DEPARTMENT, SHOTLEY BRIDGE HOSPITAL.

Applications are invited from registered medical practitioners for the above appointments, including R practitioners within three months of qualification. The appointments will be tenable for a period of six months. Salary £150 per annum, together with the usual residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of two recent testimonials, should be forwarded immediately to the MEDICAL OFFICER OF HEALTH, Health Department, Town Hall, Newcastle upon Tyne, 1.

Owing to the fact that the permitted establishment of refugee practitioners at both the Hospitals is already complete, it is regretted that applications for above appointments from refugee practitioners cannot be considered.

Corporation of Aberdeen.

TEMPORARY ASSISTANT SCHOOL MEDICAL OFFICER.

Applications are invited for the post of Temporary Assistant School Medical Officer at a salary of £500 per annum, rising by annual increments of £25 to £700 per annum. Candidates must be registered medical practitioners of at least three years' standing, and preference will be given to holders of the Diploma in Public Health. The duties of the office are primarily in connexion with the medical inspection, &c., of school-children.

Applicants should be under forty years of age.

The appointment is subject to the provisions of the Local Government Superannuation (Scotland) Act, 1937, and the successful candidate will require to pass a medical examination. The officer appointed will be required to devote his/her whole time to the duties of the office, will act under the direction of the Medical Officer of Health and School Medical Officer, and will be subject to the conditions of service laid down by the Corporation from time to time.

Conditions of the appointment, together with form of application, may be obtained from the undersigned, with whom applications, endorsed "Temporary Assistant School Medical Officer," should be lodged not later than 11th August, 1941.

HARRY J. RAE, Medical Officer of Health.

Public Health Department, 4, Albyn-place, Aberdeen.

The Royal Hospital, Wolverhampton.

(Incorporated under Royal Charter.)
(310 Beds.)

Applications are invited from registered medical practitioners, including R practitioners within three months of qualification, for the following post: HOUSE SURGEON (GENERAL SURGERY) (A), vacant 1st August, 1941. Salary at the rate of £100 per annum, with full residential emoluments. The appointment is for six months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

W. H. HARPER, House Governor.

Wolverhampton, 17th July, 1941.

Children's Hospital, Nottingham.

Applications are invited for the post (B1) of ASSISTANT HOUSE PHYSICIAN (Woman). Experience in anæsthetics desirable. The salary will be at the rate of £200 per annum, with apartments, board, and laundry. The appointment will be for six months, duties to commence forthwith.

Applications, together with testimonials, stating age, nationality, qualifications, and experience, to be sent to the HONORARY SECRETARY, 1, King John's Chambers, Bridlesmith Gate, Nottingham, on or before Tuesday, 5th August, 1941. Selected candidates will be required to attend at the Hospital for a personal interview.

Forster Green Hospital for CONSUMPTION AND CHEST DISEASES, BELFAST.

MEDICAL SUPERINTENDENT wanted. Salary £900 per annum and free house.

Applications, stating age and previous experience, together with copies of testimonials, to be sent on or before 1st September, 1941, to the SECRETARY, 99, Scottish Provident Buildings, Belfast.

Doncaster Royal Infirmary.

Applications are invited from registered medical practitioners, including R practitioners within three months of qualification, for a HOUSE SURGEON (Male) (A appointment), required immediately. The appointment is for six months. Salary at the rate of £175 per annum, with residence, board, and laundry. This large industrial area offers excellent opportunities for gaining experience.

Applications, accompanied by not more than three testimonials, to be sent to the undersigned immediately.

R. LANCASTER, Secretary-Superintendent.

The Child Guidance Training Centre, Northern House, South Parade, OXFORD.

Applications are invited for the post of Part-time PSYCHIATRIST for four consecutive sessions per week to the Child Guidance Training Centre at Oxford. Applicants must have had experience in psychiatric work with children and preference will be given to candidates holding the D.P.M.

Salary two and a half guineas per session.

Applications, together with copies of recent references, to be sent to the SECRETARY, Child Guidance Training Centre, Northern House, South Parade, Oxford, on or before Saturday, 9th August.

Exminster Hospital.

Applications are invited from registered medical practitioners, Male, for the appointment of a HOUSE SURGEON (A), to become vacant immediately, including R practitioners within three months of qualification. If held by an R practitioner, appointment will be for a period of six months. Otherwise it will be for a period of one year. Salary is at the rate of £120 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the MEDICAL SUPERINTENDENT as soon as possible.

Exminster Hospital, near Exeter, Devon.

York County Hospital.

(222 Beds.)

Applications are invited from registered medical practitioners, including R practitioners within three months of qualification, for the appointment of a HOUSE PHYSICIAN (A), to become vacant on 1st September. If held by an R practitioner, appointment will be for a period of six months. Salary is at the rate of £175 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 6th August.

J. R. MACKRILL, Secretary.

Royal Cornwall Infirmary, Truro.

(229 Beds.) Three residents.

Applications are invited from registered medical practitioners, Male and Female, for the appointment of a HOUSE PHYSICIAN (B2), in charge of the Medical Eye, Ear, Nose and Throat Department, including R Practitioners who hold A posts and who have not completed a five months' tenure of those posts. If held by an R Practitioner the appointment will be limited to six months. The salary is at the rate of £200 per annum with full residential emoluments. Applications, stating age, qualifications with dates, nationality and present post and accompanied by copies of three recent testimonials, should be sent to the undersigned.

W. E. GRENFELL, Hon. Secretary.

Truro, 22nd July, 1941.

County Borough of Preston.

SHAROE GREEN HOSPITAL (250 Beds).

JUNIOR RESIDENT MEDICAL OFFICER (FEMALE) A.

Applications are invited from fully qualified and registered practitioners for the above appointment. Salary at the rate of £150 per annum. The appointment will be for a period of six months.

Applications, stating age, qualifications, experience and nationality, together with copies of three recent testimonials, should be forwarded to the MEDICAL SUPERINTENDENT, Sharoe Green Hospital, Fulwood, Preston.

The Children's Hospital, Sheffield (Inc.)

(157 Beds.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of a HOUSE PHYSICIAN (A), to become vacant on the 1st August, 1941, including R practitioners within three months of qualification. Appointment is for a period of six months. Salary at the rate of £100 per annum, with full residential emoluments.

Applications, stating age, qualifications, with dates and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

T. H. G. GARTLAND, Superintendent and Secretary.

Staffordshire County Council.

STANDON HALL ORTHOPÆDIC HOSPITAL, Near ECCLESHALL, STAFFORD. (120 Beds.)

RESIDENT MEDICAL OFFICER (B1).

Applications are invited for the above-mentioned post from suitably qualified non-alien registered medical practitioners, including R practitioners holding B2 or B1 appointments. The salary is at the rate of £350 per annum, with full residential emoluments, and the appointment, which in the first instance will be for one year, will be subject to one month's notice. The Hospital will have an E.M.S. Fracture Department (A).

Applications, together with copies of three recent testimonials, must reach the undersigned by the 31st July, 1941.

H. L. UNDERWOOD, Clerk of the County Council.

County Buildings, Stafford, 14th July, 1941.

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Bristol Royal Hospital

(incorporating BRISTOL ROYAL INFIRMARY and BRISTOL GENERAL HOSPITAL).

Applications are invited for the following resident appointments for the six months commencing 1st September, 1941 :—

Two HOUSE SURGEONS to the CASUALTY DEPARTMENTS; B2 posts for which suitably qualified R practitioners holding A posts may apply ;

and the following A posts for which R practitioners within three months of qualification may apply :—

Four HOUSE PHYSICIANS.

One HOUSE PHYSICIAN to the SKIN AND RADIOLOGICAL DEPARTMENTS.

Eight HOUSE SURGEONS.

Two HOUSE SURGEONS to the GYNÆCOLOGICAL DEPARTMENTS.

Two HOUSE SURGEONS to the E.N.T. DEPARTMENT.

One HOUSE SURGEON to the OUT-PATIENT FRACTURE DEPARTMENT.

One HOUSE SURGEON to the IN-PATIENT FRACTURE DEPARTMENT.

Salaries at the rate of £80 per annum, plus £20 per annum war bonus, except in the case of the Casualty House Surgeons, who will receive salaries at the rate of £150 per annum, plus £20 per annum war bonus.

Candidates, who must be registered medical practitioners, to send in their applications (on forms to be obtained from the undersigned) which must be returned on or before 31st July, 1941, together with copies of not more than three testimonials. The elected candidates must become members of a Medical Defence Association before taking up their appointment.

ELLIS C. SMITH, Secretary and House Governor.

Bristol Royal Infirmary.

Royal Infirmary, Bradford.

Applications are invited from registered medical practitioners Male) for the following appointments :—

One HOUSE PHYSICIAN (A) and Three HOUSE SURGEONS (A), including R practitioners within three months of qualification ;

One HOUSE PHYSICIAN (B2) and Two HOUSE SURGEONS (B2), including R practitioners who now hold A posts ;

to become vacant on 31st August. Six months' appointments. Salary £150 per annum, with board, residence, and laundry. There are 345 Beds and 10 Resident Officers.

Applications, stating age, nationality, qualifications, and previous experience, with copies of three recent testimonials, should be sent to the undersigned immediately.

H. TRUSSON, House Governor and Secretary.

2nd July, 1941.

Royal South Hants and Southampton

HOSPITAL, SOUTHAMPTON. (255 Beds.)

Applications are invited from registered medical practitioners, Male and Female, for the following appointments :—

HOUSE PHYSICIAN (B2), to become vacant on 1st August, 1941, including R practitioners who now hold A posts.

HOUSE SURGEON (A), to become vacant on 1st August, 1941, including R practitioners within three months of qualification.

Appointments will be for a period of six months each. Salary at the rate of £175 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

EDWARD L. WIRGMAN, House Governor.

Preston and County of Lancaster

QUEEN VICTORIA ROYAL INFIRMARY.
(Class 1A Hospital. 404 Normal Beds.)

Applications are invited from registered medical practitioners holding the necessary qualifications for the post of RESIDENT ANÆSTHETIST (B2) which will become vacant in September next, including R practitioners who now hold A posts.

The possession of the Diploma in Anæsthetics would be an advantage, but is not compulsory. The salary will be at the rate of £175 per annum, but a higher figure will be paid to a successful applicant who holds the Diploma.

The post of Assistant Medical Officer to the Venereal Diseases Department, which entails attendance at three late afternoon clinics, the salary for which is at the rate of £100 per annum, can be attached to the first-named post if desired.

If held by an R practitioner the appointment will be for a period of six months ; in other cases the appointment will be for twelve months in the first instance.

Applications, stating age, nationality, qualifications, and experience, to be forwarded to Mr. JOHN GIBSON, J.P., F.H.O.A., Superintendent, Royal Infirmary, Preston.

Harlow Wood Orthopædic Hospital,

Near MANSFIELD, NOTTS. (275 Beds.)

Applications are invited from Male registered practitioners for the appointment of HOUSE SURGEON (B2) now vacant, including R practitioners who now hold A posts. If held by an R practitioner the appointment will be limited to six months. Otherwise it may be extended for a further six months. The salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be received by the SECRETARY by 1st August.

Ancoats Hospital, Manchester, 4.

HOUSE SURGEON (A), General (Male or Female). R practitioners within three months of qualification may apply. Salary £110 per annum, with board, residence, &c. Appointment for six months.

Apply at once, stating age, qualifications, &c., enclosing three recent testimonials.

HERBERT J. DAFFORNE,
General Superintendent and Secretary.

Kent and Sussex Hospital, Tunbridge

WELLS. (534 Beds.)

APPOINTMENT OF RESIDENT HOUSE SURGEON AND CASUALTY OFFICER (B2).

Applications are invited from registered medical practitioners (Male) for the appointment of House Surgeon and Casualty Officer (B2), to become vacant immediately, including R practitioners who hold A posts and who have not completed a five months' tenure of those posts. If held by an R practitioner, appointment will be limited to six months. The salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, to be sent to the undersigned as soon as possible.

TOM B. HARRISON, Superintendent-Secretary.

The Otago Hospital Board.

UNIVERSITY OF OTAGO AND DUNEDIN HOSPITAL, NEW ZEALAND.

Applications are invited for the position of RESIDENT SURGICAL OFFICER (Senior).

Candidates must hold a Degree in Medicine of a British University, must have been qualified for three years, and have held resident hospital appointments for at least one year. Preference given to unmarried applicants.

The duties will be those of superintending house surgeons with, in addition, certain tutorial work under the direction of the Professor of Surgery.

Salary to be at the rate of £500 per annum (New Zealand currency), with board and residence.

Full details may be obtained on application to the Office of this Newspaper and the High Commissioner's Office.

JOHN JACOBS, Secretary.

Otago Hospital Board, Dunedin, 18th July, 1941.

Partner required in rapidly increasing

natural therapy PRACTICE. Principal is willing to train incoming partner in dietetics, manipulation, and hydrotherapy. An interest could also be acquired later in a clinic which is to be opened in Cheshire for resident patients and as a training centre.—Address, No. 802, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Surgical Instruments.—Large quantity

new unused Surgical Instruments, all types, for Sale, cheap. Call and inspect any time except Thursday afternoon. 126, Hoxton-street, Shoreditch, N.1.

Gloucestershire.—In the Cotswold

Country, unopposed Country PRACTICE averaging over £1000 a year, panel 600, appointments about £80 ; easily worked. Modern house, 5 bedrooms, with central heating, main water, electric light, h. & c. basins. Garage for two ; well-stocked garden with tennis lawn—all in perfect order. Practice with house, drugs, instruments, &c., £5000. Selling owing to ill-health. No agents.—Address, No. 795, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

RADIUM : You can hire up to

100 mgms. of radium element made up to any required specification, for the moderate fee of £5 5s., from—
J. C. GILBERT LTD., Columbia House, Aldwych, W.C.2.
Tel. : Chancery 6060.

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of excellent CONSULTING ROOMS are available for full and part-time use at moderate rents. Particulars on application.—ELGOOD & Co., 1, Portland Street, Welbeck Street, W.1. Welbeck 8974.

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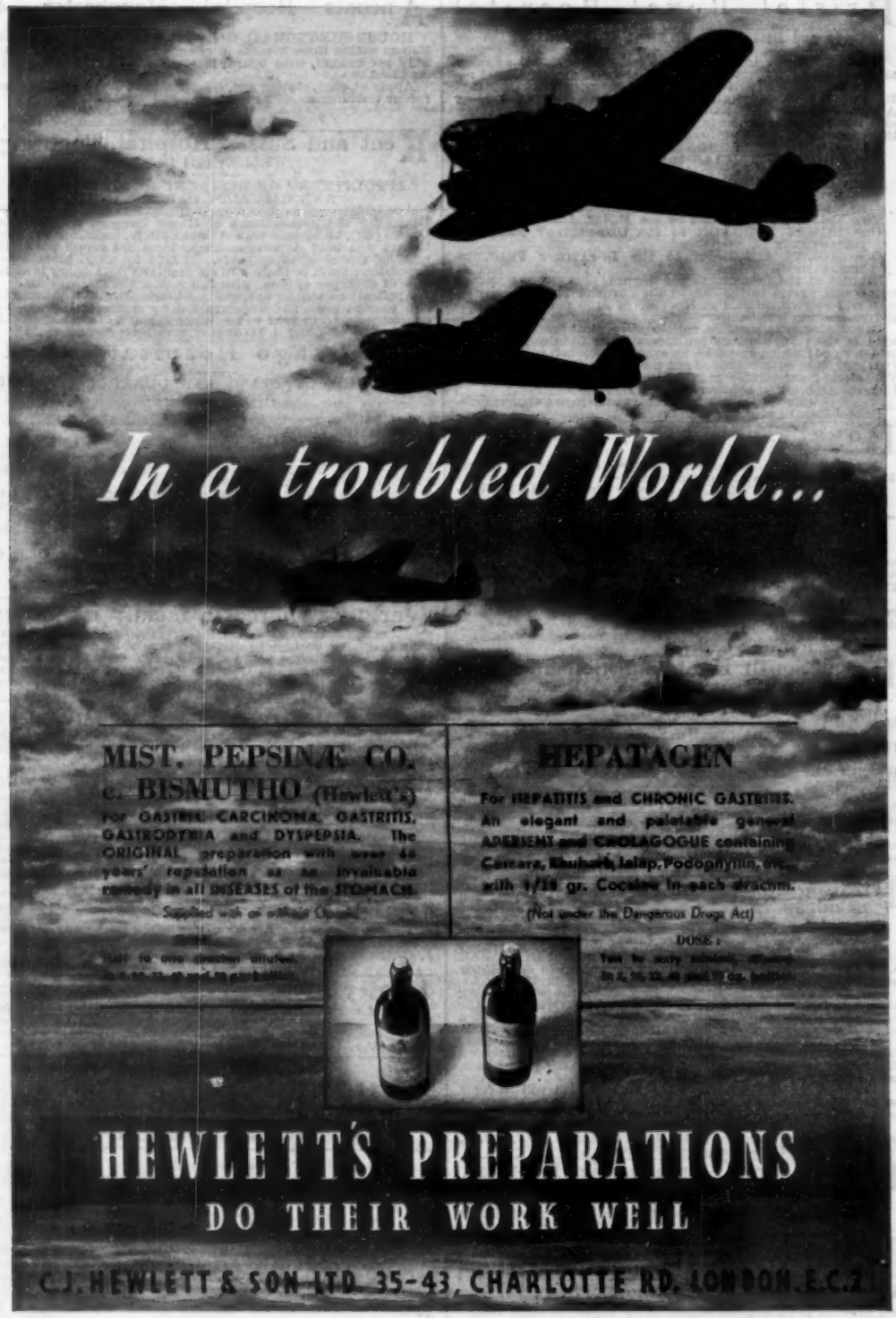
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For HEPATITIS and CHRONIC GASTRITIS. An elegant and palatable general APERIENT and CHOLAGOGUE containing Cascara, Rhubarb, Jalap, Podophyllin, etc., with 1/15 gr. Cocaine in each drachm.
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